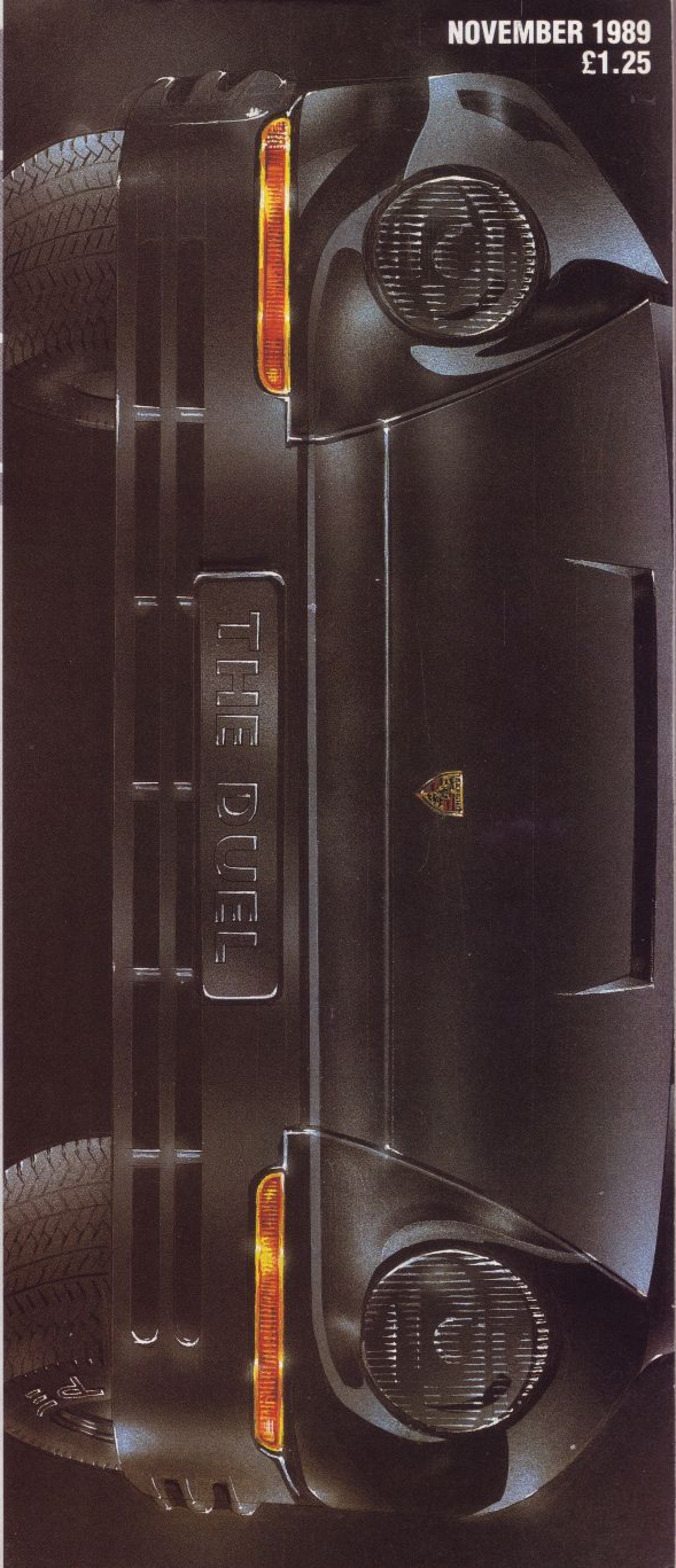
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NOVEMBER 1989
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AMSTRAD COMPUTER USER

THE OFFICIAL AMSTRAD CPC MAGAZINE



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WIN A PORSCHE

FEATURES

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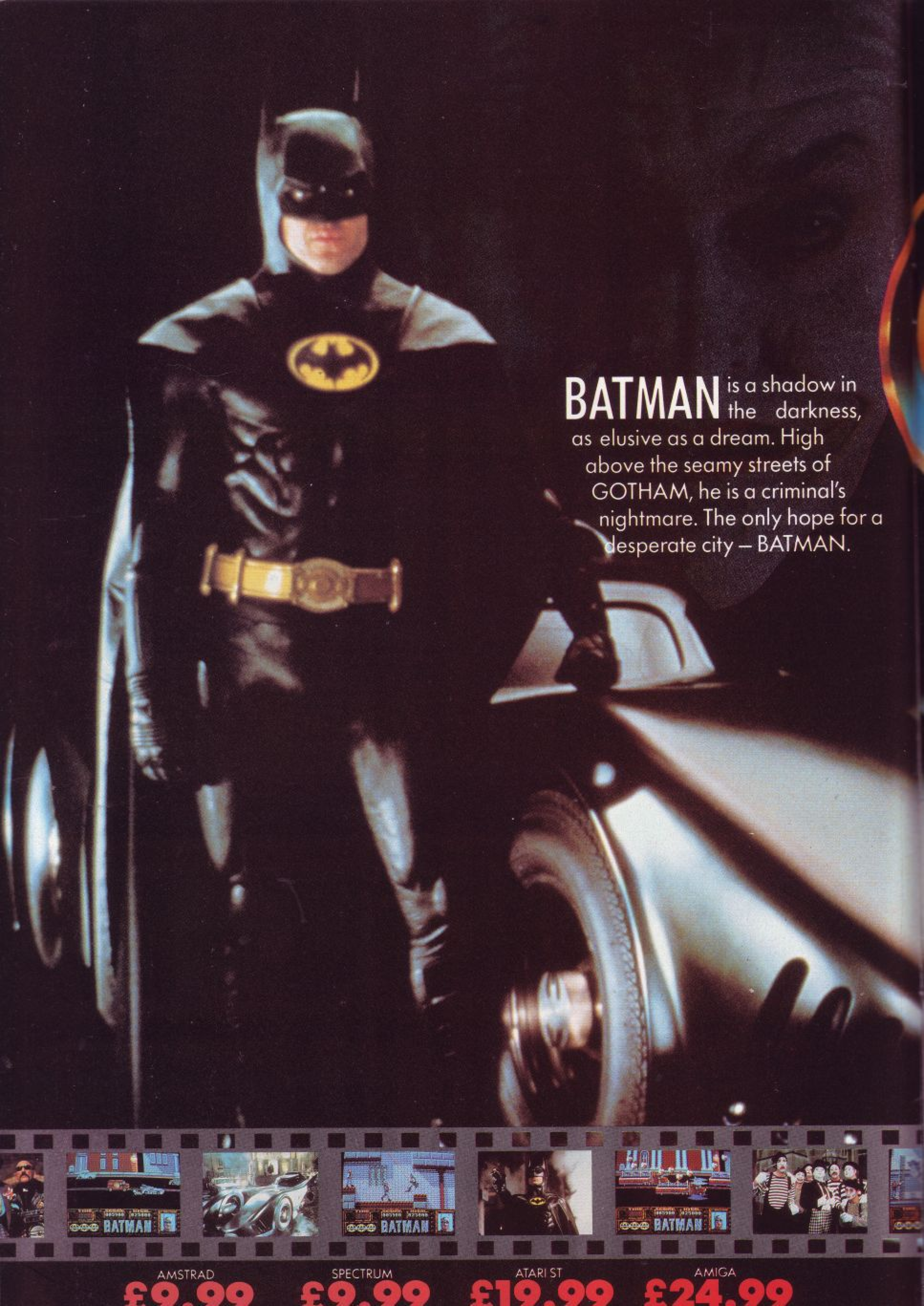
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REGULARS



FEATURES

LETTERS



Any books out there?

I am writing to ask if there are any books I can buy to help me on my Amstrad CPC 6128 computer? If there are, I would be most grateful if you could send me a list of them. Very many thanks.

Iain A. Mumford,
Ayrshire,
Scotland.

ACU: See the reviews in this issue.

Baffled

I have an Amstrad CPC464 and I am trying to teach myself BASIC in order to be able to write simple programs to amuse my grandchildren.

I understand a little of BASIC, but I am baffled by the CALL commands. I know two of them: "CALL &BC02" and "CALL &BD19", but do not know any more.

Would it be possible, please, to print a list of the CALLS and their meanings in your magazine.

I am a subscriber to ACU.

C. Spencer,
Barnsley,
S. Yorks.

ACU: There are far too many CALL commands to print here, but you can find the information you seek in the *Advanced User's Guide* from Glentop. For further details see this month's book round-up.

German gratitude

I am writing to tell R. Conway (who wrote in the August issue about Amstrad's lack of response) that I found the company very helpful when I needed them.

As you can see from my address, I live in Germany. Almost a year ago we returned to the UK for a visit. While I was there I purchased my Amstrad from Comet and tested it there.

It was fine. But when I returned to Germany, it wasn't so fine.

The disc drive wouldn't read from the disc. So, I wrote off to Amstrad (the registered office in Brentwood); just over a week later I received their reply, telling me where the nearest office was. They seemed very concerned.

By the way, I didn't actually need to take it in to this office. I put a disc in the drive. As usual it wouldn't read, but this time I leaned on the drive – perfect again. And I haven't had any trouble since!

David Hinsley,
Area Office Dusseldorf,
PSA BFPO 34.

10 trouble

I think a lot of people will have had trouble with the ten-liners in the August 1989 issue. I have listed the errors below.

1) PUZZLE – Line two should read b(x,y)=p(L*16+t) at the end. This means that the shape shown is the same shape that you have to reconstruct.

2) EYE – The CPC464 does not have a GRAPHICS PEN command. Instead use PLOT 1000, 1000, colour. Of course in the listing an 'i'(!) would be substituted for colour.

3) KILL 'EM ALL – A white spot covers part of the data in line ten, making entering impossible.

4) SNAKE (SNAKX?) – Control characters were used in line twenty which makes entering difficult. The characters are CTRL T, CTRL I, CTRL J, CTRL K and CTRL L.

I also would recommend that you cut down on the huge cartoon figures as they take up a lot of space; Combat Zone could have easily been cut down to three pages in the August issue, for example. Incidently, what is an arcade feature doing in an Amstrad magazine? Perhaps there should be a separate magazine published for 'Arcade Gamers'.

Lastly, if anyone has a spare Firmware specification manual (SOFT 158), either after upgrading to a SOFT 958 or one that they don't need, I shall pay full price and postage if they could contact me on (0224) 869503.

A. D. Brown,
Cults,
Aberdeen.

Dungeon Master fan

I am a *Dungeon Master* fan, having played it on a friend's Amiga, but I did not think it was available for the Amstrad.

But the first sentence of a review in your September issue, of *Bloodwych* to be precise, reads "For many people the 16-bit program of 1988 was *Dungeon Master*. So, please, please, please, where can I find Dungeon Master?

J. Dunstenville,
Clifton,
Bristol.

ACU: I regret to inform you that *Dungeon Master* is not available on the CPC. The reviewer compared *Bloodwych* and Dungeon Master because they are both released by Mirrorsoft and because both games are based upon a similar idea – dungeon exploration and monster bashing.

Any copies?

Please could you tell me if you still have any copies of *Utilities Unlimited* with its documentation for £14.90, as I think it is excellent value. The last time I saw it was in the April issue. And are you going to bring back the offer pages with new products? The last thing I would like to know is if you are going to have an adventure column? Will you please go and find out. Here is a joke that I made up to pass the time: "Why did the fly, who could not fly, fly away when he was put on a book?"... Because the book was called 'How to Fly'."

Adrian Seale,
Ropley,
Hants.

ACU: The Utilities Unlimited have ceased to be, but, as you can see from the last issue, the offers are back with a vengeance. There are no immediate plans for an adventure column, but if the survey results indicate that this is what the readership wants, then this is what the readership will get.

Changes

Over the past few months I have noticed a few changes in *Amstrad Computer User*. Most of the changes are improvements but I would like to see a few more serious articles.

Dani Lopez,
Charlton,
London.

ACU: We try to get the balance right and to help us achieve perfection we always welcome feedback.

Progress

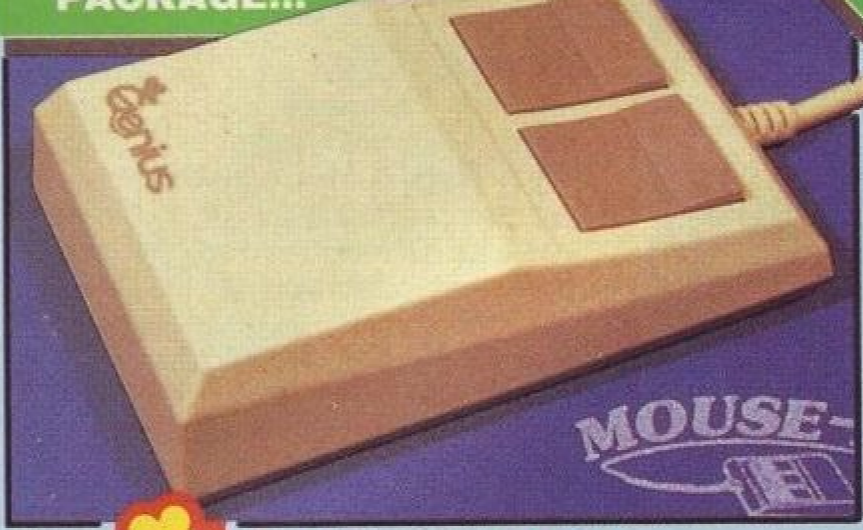
I am writing to ask someone to explain something to me. I have not been in computing very long but I am making steady progress; I have though, a problem. I have read in the Amstrad CPC464 manual that the keywords POKE, PEEK, FRI, MEMORY and BYTE are not for beginners to use. I have then read these keywords in your 'hairy hacker' column. Could someone explain to me how this computer memory works, and how I can use it so that I don't mess up my machine.

Bindi Goucher,
Mansfield,
Notts.

ACU: You need not worry about damaging your machine by using these commands. You may cause the machine to crash, but simply turning the machine off and then switching it on again will restore the memory to its natural state.

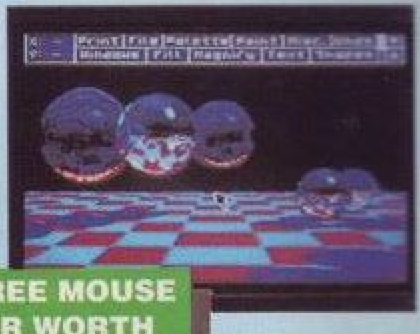
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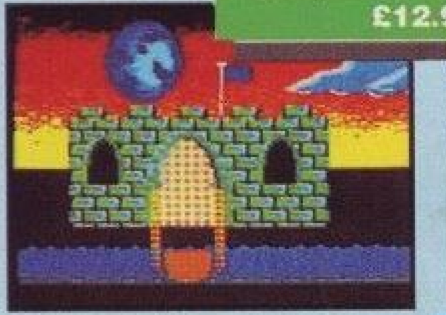


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464 owners must already have at least one Amstrad drive.

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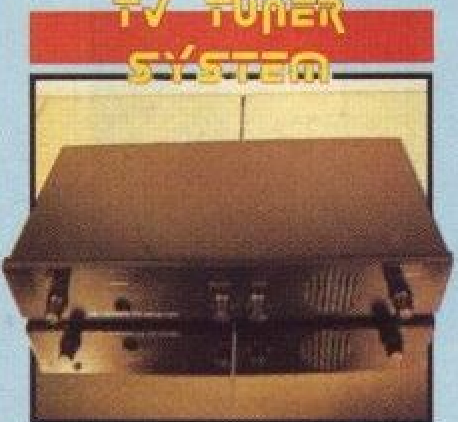


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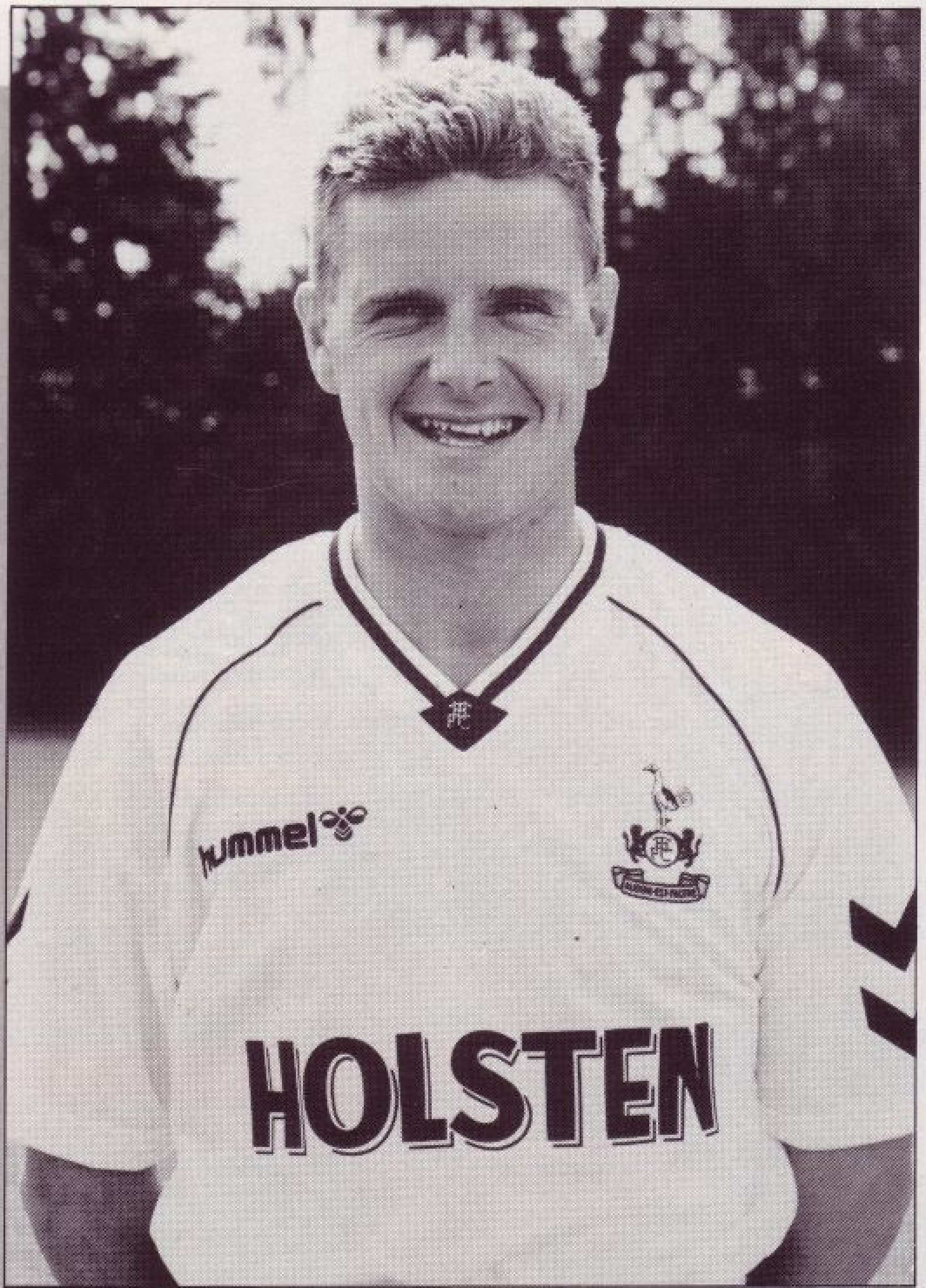
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Paul Gascoigne.

Gazza's game

Topical Tottenham and England midfield star Paul Gascoigne is to feature in his very own computer game.

Empire, a new Entertainment International label, will launch Gazza's Super Soccer later this month. The game includes the best features found in previous football games such as full ball control and a boot-o-meter showing the strength of the shot but it also includes a few enhancements including a new approach to perspective. The pitch is split into three sections, each roughly a third of the pitch.

When in the centre third your view of the pitch is side on from the stands but when you approach one of the goals the view switches through ninety degrees to look down the pitch. This perspective gives a better view of the goal and players near it thus allowing a greater degree of accuracy in shot and goal keeping.

For players wishing to control other league teams besides Spurs most of the 4 English Divisions and the Scottish Premier Division will be included along with their strip. Team members vary in skill and ability and not so surprisingly Gazza is the best of the lot.

The game certainly promises a lot and CPC owners will be able to test it out for themselves later this month. The game will retail at £9.99 on cassette and £14.99 on disc.

The X-Men cometh

Fans of the X-Men are in for a treat with the upcoming launch of an X-Men computer game from The Edge. Three X-Men games are planned each featuring one of the team members. One of the characters targeted for conversion is the steel clawed Wolverine.

The conversion of comic characters follows closely on the heels of two previous paper to pixel conversions, Garfield and Peanuts.

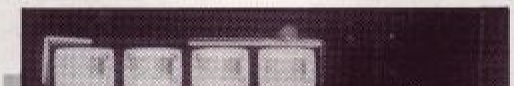
The action should hit your screens some time around Christmas.

Video news

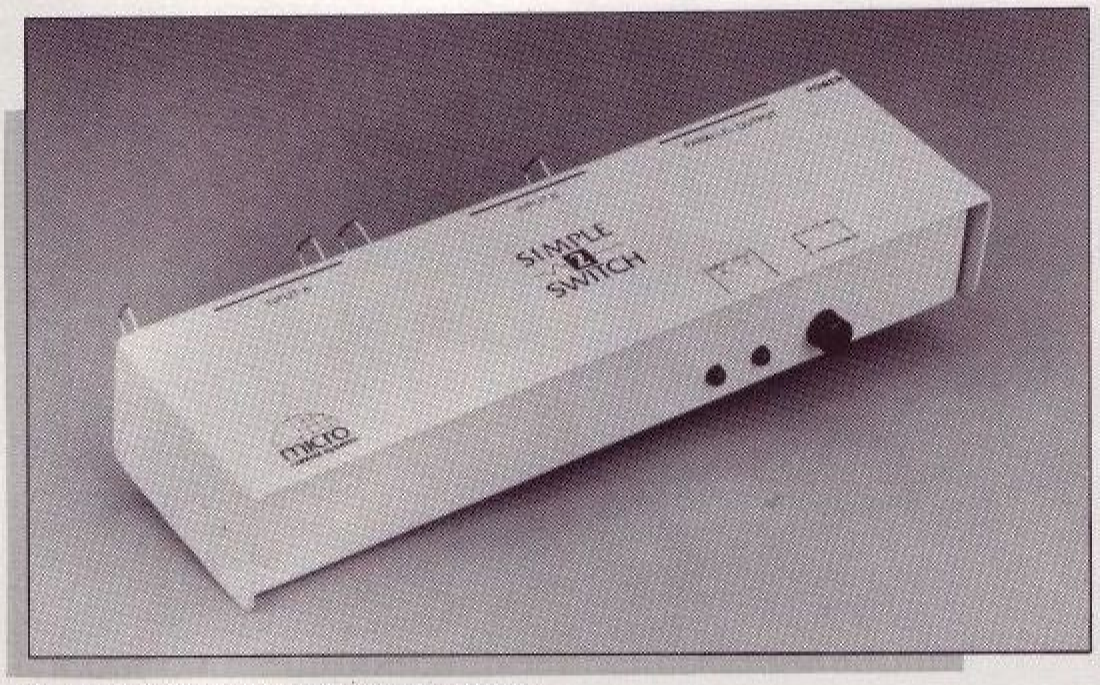
Action Screenplay, the video magazine for computer users, is making itself available for rental in a bid to increase its readership.

The publication is now rentable from computer stores and video rental shops throughout Europe at a cost of around £1.50. It has also been expanded to include chart gossip and a new section called Playback which looks back over past games successes.

Producer Jon Beales commented "Our sales are currently excellent but we feel that bringing the price below £2 will increase demand. We hope the majority of computer magazine buyers will also want Action Screenplay. By renting rather than selling we should increase our audience to hundreds of thousands. The product lasts over 90 minutes and in the programme we give a brief review of how the industry stands at present. We can give an idea of what animation and sound is like in computer games and what industry personalities are really like. By using the dynamic TV medium we are able to bring many aspects of the industry alive."



John Beales.



The Simple 2-Switch from Micro-Control Systems.

Two's company

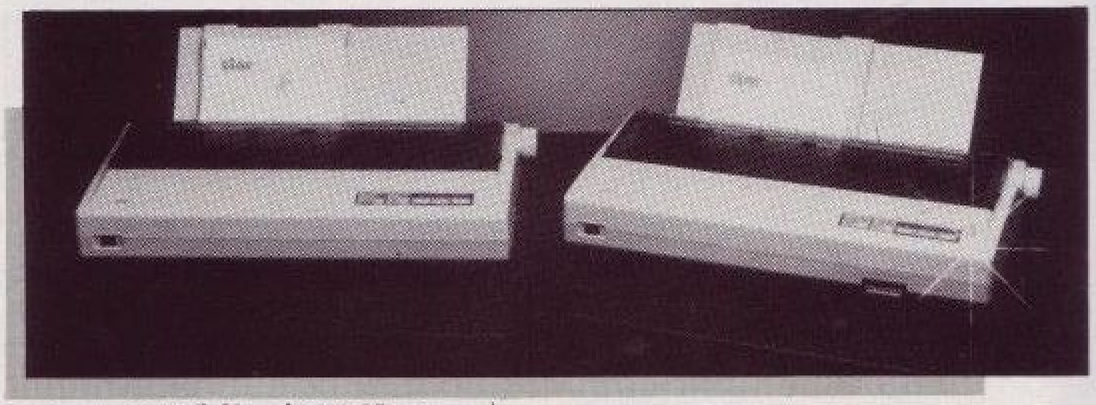
Nottingham based Micro Control Systems has launched simple-2-Switch, a dual mode device that allows two users to share the same printer. The device allows manual or automatic switching between users.

Star quality

Star Micronics U.K. Ltd has announced drastic price cuts on its Business Series printers. The LC24-10 has taken the brunt of these price reductions with a massive £100 price cut. This multi-font, 24-pin dot matrix printer with paper park now retails for £299. Further reductions in the range include a £30 price cut on the LC-10 bringing it down to £199 and a £40 price reduction on the LC-10 colour printer bringing the price down to £259.

Star has consolidated its place in the competitive printer marketplace by appointing National Computer Supplies as a dealer.

Derbyshire based NCS supplies data switch boxes, boosters and converters, buffers, printer sharers and cables, computers, discs, and many other accessories.



Star's new LC-15 (left) and LC24-15 printers.

General ledger

SD Microsystems has released an upgraded version of its best selling program, General Ledger 6128. The enhanced program can now hold up to 300 transactions per title as opposed to the previous 150-200 files per file. A trial balance report function has been included along with automatic handling of up to 10 standing orders. Further improvements including 10 extra expense accounts, faster date sort and a colour change option.

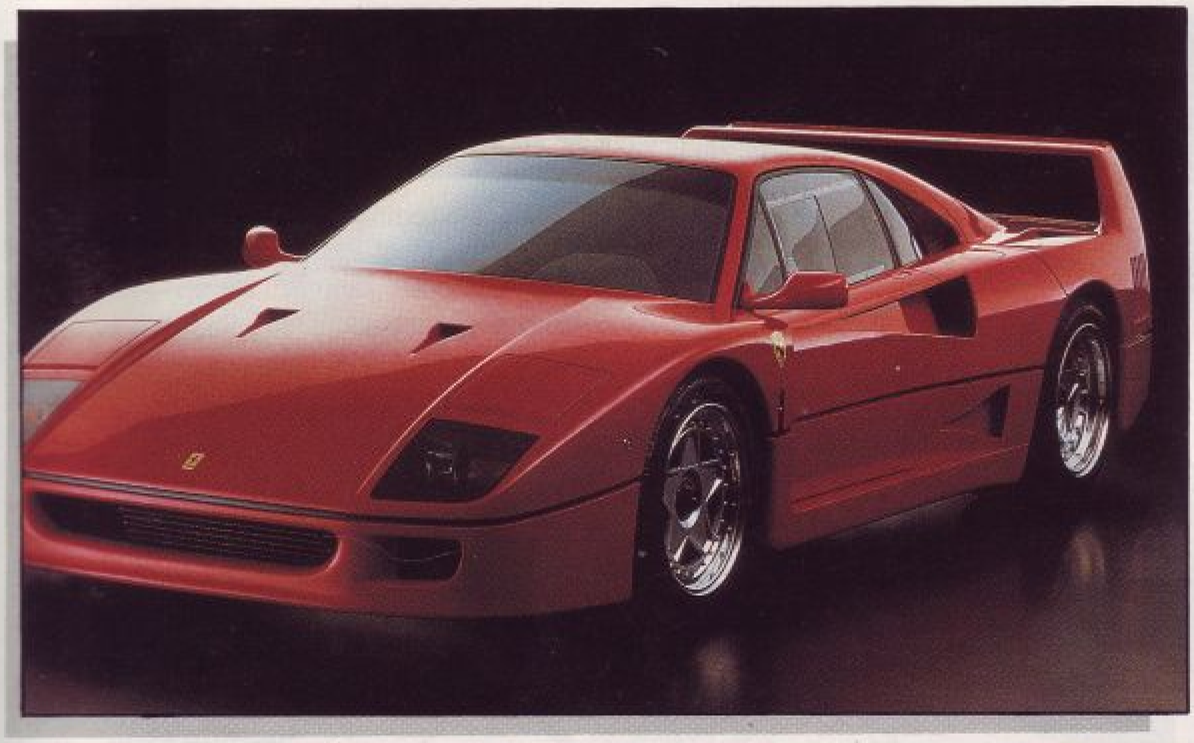
General Ledger 6128 (2.0) retails for £29.95 plus £1.00 p/p. Owners of version 1.0 can upgrade for £10.00 with extra manuals costing a further £2.00.

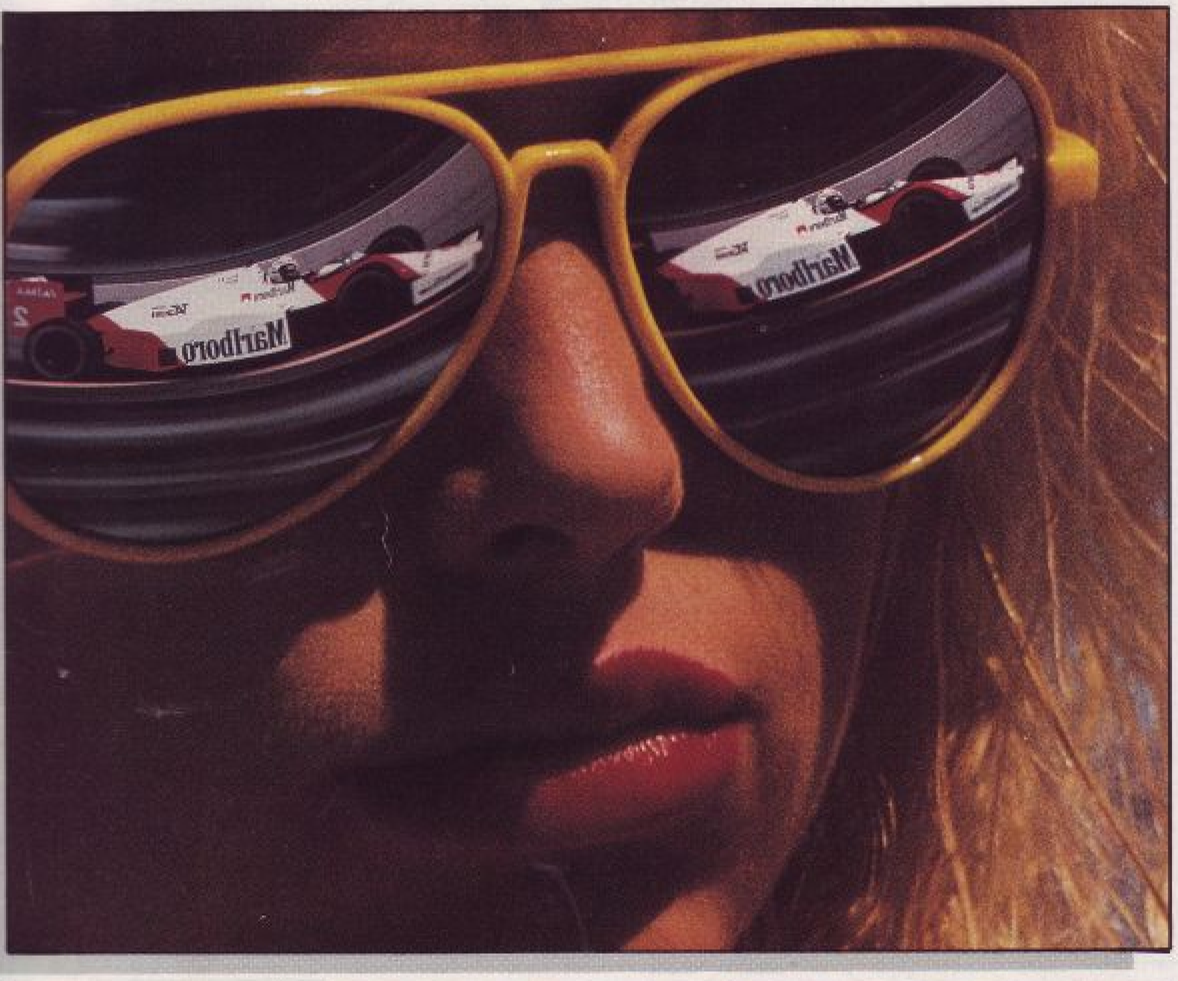
CPC 646 owners can now run General Ledger as SD Microsystems is now supplying the program on cassette. The 464 version retails for £19.95.

COMPETITION WINNER

The lucky winner of the original signed *Time Scanner* artwork is non other than J. Halliday from Rossendale.









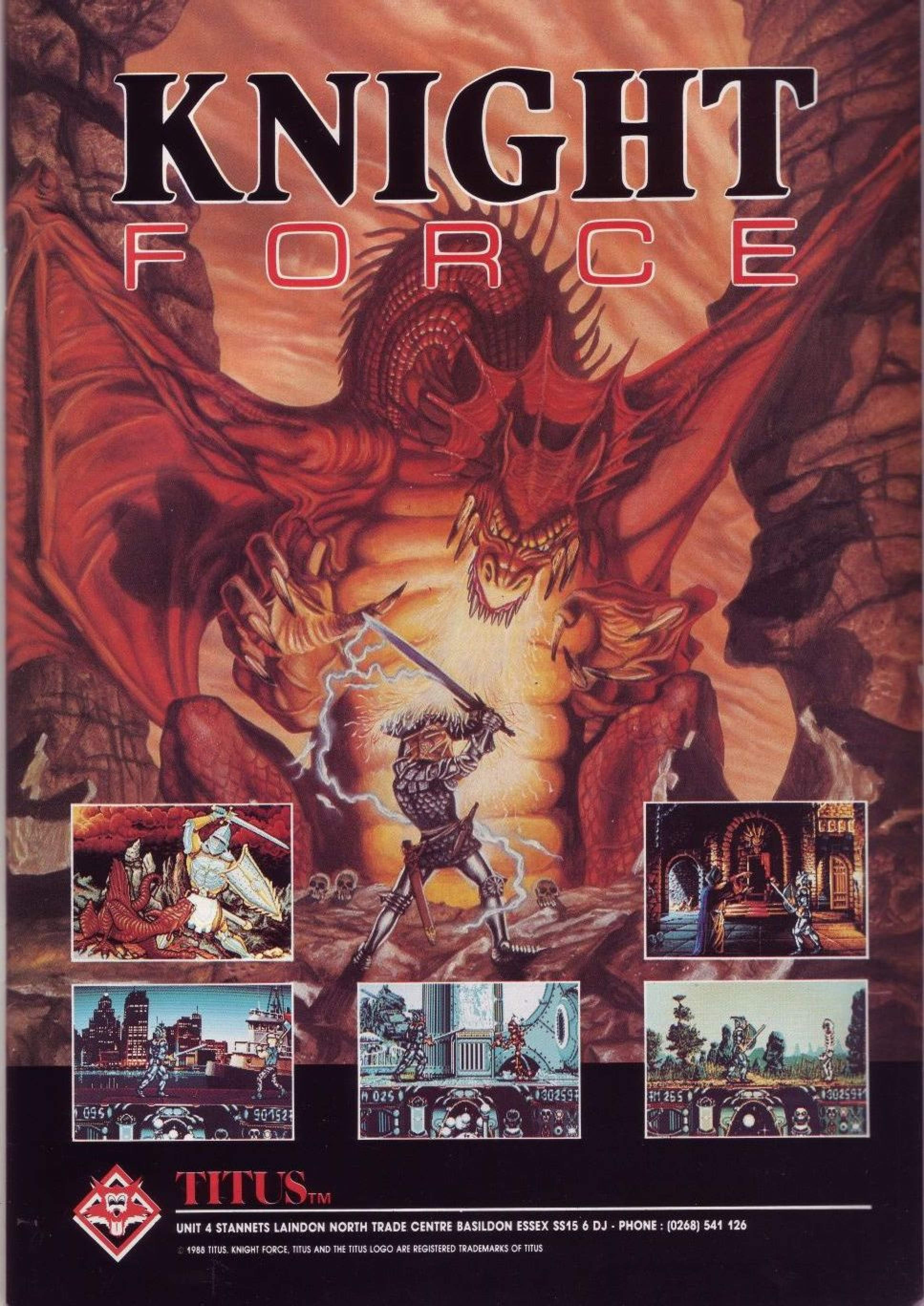
The cover game this month is Test Drive II and to allow you to get in on the action we are giving away (in conjunction with Accolade) two remote controlled Porsches and twenty extra super Grand Prix posters. All you have to do to win one of these fantastic prizes is answer the three simple questions below. The first two correct entries drawn from the sack win the Porsches and the next twenty a poster each.

1. How many engines does the Porsche 959 have?

2. Name one driver who drives for Porsche?

3. Which car did Prince sing about and what was its colour?

The editor's decision is final.
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BrunWord

BrunWord 6128 £30

BrunWord 6128 is specially written for the Amstrad CPC6128. Months were spent just optimising the routines into their smallest, most efficient form. The result is the fastest, most convenient word processor for this computer, complete with the fastest spelling checker and a card filing programme for mail merging. Whether you are writing a few letters or a complete novel, you will find no better assistant than BrunWord.

The word processor, spelling checker and 30,000 word dictionary, are all loaded into memory by typing RUN "BRUNWORD". The disc drive is then completely free for your data disc.

All other word processors, even the ROM versions, need to access the programme disc to test the spelling. (ROM versions have the dictionary on disc). This is slow and can involve many disc changes. For example, Protext needed the disc to be changed eight times to check the spelling of our test file, whereas BrunWord needed no disc in the drive.

The 40 page BrunWord manual has several detailed examples, starting with step by step instructions to produce and print a simple letter. But your very first step is to load the TUTOR file into BrunWord. This takes even the complete novice straight into word processing and demonstrates the powerful editing and formatting features of BrunWord. There are also examples of printer control, showing how to create headings, to underline or to emphasis, and five deliberate spelling errors for you to correct. The tutor takes about 20 minutes to run through and after that you will feel confident to type in your own text.

BrunWord Features

*40, 80 or 128 column display *Touch typing speed over 200 words/min *True insert or overwrite *Justify or unjustify paragraph or whole text *Justified text has balanced appearance *Instant word wrap *Block save, move, copy, insert and delete *Local editing with word delete/undelete *Adjustable margins and TABs *Column/Line/Page display with file name *True word count *Find and replace *Help menus *Memory filing system *Single character embedded printer commands (18 with 3 printer codes and 21 with 10 printer codes) *Page throw markers *Multiple copies *Odd/even page headers/footers with page numbers *Multi file printing (new page or continuous) *Print specified pages *Works with any printer *True display superscript and subscript numbers *User defined print characters *Load ASCII files from other word processors *Save ASCII files for other word processors *Files can be encrypted *Maximum file size about 9 pages of text.

BrunSpell Features

*Memory resident with word processor *Checks 4,000 words/min *30,000 word dictionary *No American spellings *Add up to 5,000 of your own words *Instant lookup *Helps to find correct spelling *Automatic correction.

DataFile Features

*Alphabetical, numerical, date sorting on any field *User defined headings *Search routine *Data merging into BrunWord *Label printing.

BrunWord Junior

Low cost version of BrunWord 6128 on 3 inch disc, including the spelling checker, 30,000 word dictionary, TUTOR file and manual. Holds just one page of text and cannot save words to the dictionary. Otherwise as BrunWord 6128. Cost £18. Up grade later to BrunWord 6128 for £14.

Tasword Upgrade

Send your original Tasword 6128 disc (not the packing or manual), and £23.00. We will return your programme together with the full version of BrunWord 6128 with BrunSpell and DataFile.

Info-Script £50

The great power of any database is only realised when the data can be put to use. A database system is centred around saving, sorting, finding and displaying the data. Obviously, very essential features but only if there is a purpose to storing the data. That purpose might be names and addresses for mail merging, a stock list of items being sold that generates a buying list, a catalogue of your compact disc recordings so that you can take a printout with you to the shop, a catalogue of recipes so that you can have a print out in the kitchen of the in-season treats, a catalogue of garden activities that gives you a reminder list to hang in the garden shed.......

The common element being the need to take the data away from the computer, in a form that suits your immediate requirement.

We gave considerable thought to this and concluded that the only solution was a proper text handling system within the database itself. In other words, a word processor. We looked into designing a special word processor but quickly realised that BrunWord, with its memory filing system, is ideal.

This is the exciting concept of Info-Script. A comprehensive relational database integrated with a powerful word processor, giving total flexibility to the way that the data is printed. A fast, user friendly combination that has the depth of power to keep up with your needs. A mail shot, a restaurant wine list, a summary of expenses.......

BrunWord Upgrade

Send your BrunWord 6128 disc, BrunWord manual (not the packing) and a cheque for £22.00. We will record Info-Script, test the disc and return with a new manual.

BrunWord Elite £90

A superb programme which has printed this advertisement but the release date has been put back while we resolve problems with certain 24 pin printers. Meanwhile don't despair, buy Info-Script.

Our booklet BrunWord & Printer will need a few changes to the conclusions, so is also delayed.

Comparisons

We have tested BrunWord 6128, Protext (disc) and Tasword 6128 with the same file of 3366 words.

BrunWord scrolled 40% faster than Protext which in turn scrolled 19% faster than Tasword.

Protext was the fastest to justify but needed a separate operation to see the result. BrunWord produced the best appearance of all three and was 30 times faster than Tasword.

Our simulated typing test reached 218 words per minute. Both BrunWord and Protext had no trouble at this speed but Tasword was very slow inserting text into the start of a paragraph and could only handle 16 words per minute.

The spelling test checked all 3366 words. BrunSpell took 52 seconds and needed no disc changes. Prospell took 6 min 24 sec and needed 8 disc changes. Taspell took 18 min 46 sec and needed 3 disc changes.

100 Letters £15

This is a utility for use with Info-Script. It is supplied with over 50 pre-written letters and has a special format that will allow you to add hundreds of your own letters.

For example, you want to place a 'Wanted' advertisement to buy another CPC6128. Insert the Info-Script disc. Type RUN "INFO". Insert your data disc and load your name and address file. Insert the 100 Letters disc. FIND the 'Yellow Advertiser' record from your own file (now in memory). Type LET072 into the ACTION field and CPC6128 into field 17. Press T for Transfer. Info-Script will load letter 072, personalise it with the address of the paper and insert the 'Wanted' item. The letter is then in the word processor and can be edited in the normal way to be exactly what you want, and then printed out. When that is done press <ESC> * and you are back in Info-Script, with the 'Yellow Advertiser' record still selected, ready to address the envelope. You can write as many letters as you like without changing the disc and you will never wait more than a few seconds.

100 Letters is supplied with an operating manual which takes you easily into writing letters and explains, in simple terms, how to create your own letter patterns. An average CPC6128 owner, using easy patterns, can expand the library to about 100 letters but there is no limit.

Letters

I am extremely interested in the sound of your Info-Script. However, as the cost is £50 I am somewhat hesitant in purchasing and would therefore be grateful for any further literature. I am presently using Protext on ROM with Promerge and Pro-filer, but accessing Pro-filer is incredibly slow and long winded. Your advert would indicate that access time to stored data is much superior.
Mr G (Nottingham).

Thank you for my recent copy of Info-Script. My euphoria has nearly died down now - it is superb. It is a big improvement on my Protext and Pro-filer in that it combines the two with vastly superior speed and is exactly what I need.
Mr G (Nottingham).

May I take this opportunity to express my appreciation of BrunWord. My son has been the main user. After years of torture in school with pen in hand, the use of the word processor enabled him for the first time to concentrate upon the substance of what he wanted to write, and return later to correct and organise. The net result is that a young man who formally struggled at school and hated it, now accomplishes the written components of his course with ease and satisfaction.
Mr G (Sutton Coldfield).

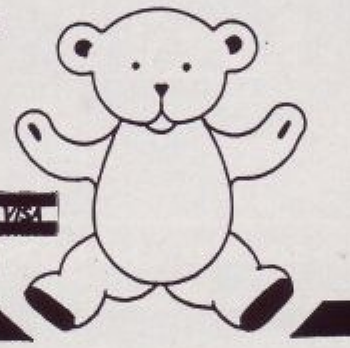
I have found it (BrunWord) a very easy word processor to use, and the more I use it the more I like it. The same goes for Info-Script, the more I use it the easier and more flexible it becomes.
Mr L (Australia).

Please supply BrunWord 6128. I have both Tasword (used for his letter) and Protext. Why do you think I deserve the discount offered..... my age 76.
Mr S (Glasgow). (see ACU Aug 89)

Send cheque/PO/Access number/Visa number to:

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Telephone (0245) 252854 (24 Hours)



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COMBAT ZONE

John Cook makes another sortie into neon no-man's-land.



Here we are, back in the combat zone, ducking and diving, dodging and weaving to avoid those stray photons as they ricochet off the screen and scream out into infinity. I mean, if they can transform aliens into clouds of sub-atomic particles, heaven knows what they might do to hair gel.

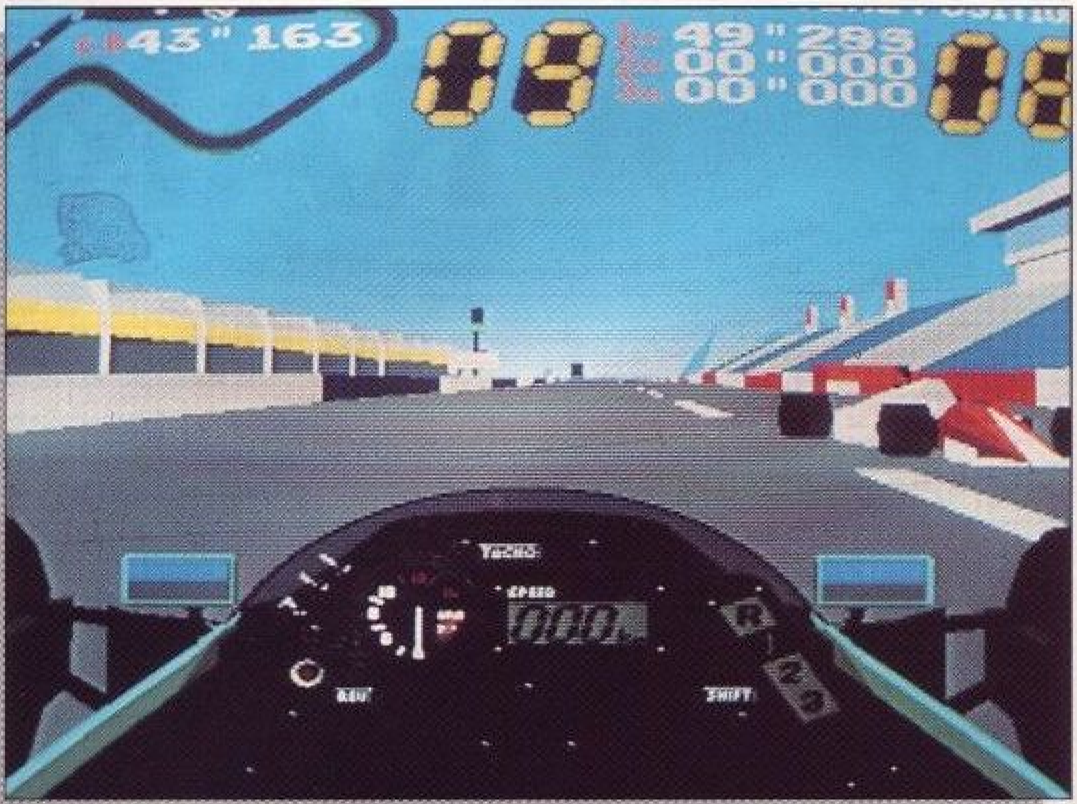
It has been another great month down in the arcades, I can tell you, with the usual number of new and spectacular titles to whack the spare shrapnel into.

With so many new titles coming in every month, it is not that often that one game holds you for more than a few weeks. One that has got me hooked this summer, however, is a title from Toaplan called *Hellfire*. You might remember me mentioning it in passing a few months ago. It is a *Nemesis* clone with the variation that you can alter the direction of fire of your spaceship, cycling through forward, back, up/down and diagonal fire.

All this time afterwards I still play the machine – almost to destruction – and so, by the looks of it, do several others. Check it out yourself if you can, assuming you have not already and expect an 'artistically inspired' CPC version from someone or other in the near future.

Most impressive this month has to be another game I mentioned way back at the start of the year – *Winning Run* from Namco. Winning Run was previewed in January at Europe's premier arcade show, the ATEI. Strangely enough, however, it is only relatively recently that the units have made it into this country in any quantity. Rush cut and search for one immediately!

It has to be the best racing game on a coin-op to date. Best? How about *Super Monaco Grand Prix* from Sega,



Winning Run

with those astonishingly fast sprite routines, mega sound and wobbly seat? Mm, well, SMGP is completely wonderful in its own way – believe me, I love it – but what does Winning Run have that it does not? The Polygoniser, that is what.

This is a software 3-D-filled polygon graphics system that has been specifically developed for the game. Yes! A three-dimenstional racing game! Seen *Carrier Command* on the CPC? Astonishing though that is, you cannot help but hope for a little more colour and a little more speed. Well, throw in two 68000 chips, half a ton of custom chips and a steering wheel and you have Winning Run.

Fast, loud, realistic, (particularly on the 'technical' 5 speed level); this is the works. This is the race game of the moment. And try to play on the sit-in unit if you can as well, because the servo movements are perfectly coordinated, and violent enough to make you wish you had not just swallowed that large portion of chips! Catch this one, if you can!

Meanwhile, there have been more shooting games slipping on to the scene. The phenomenal success of *Operation Wolf* last year was not maintained by Taito's two player follow-up, *Operation Thunderbolt*. Yet games like *Mechanised Attack* and *Cabal* (soon to be on home format from Ocean) have amply catered for and been well received by the mob of rather strange individuals that are into this kind of thing.

Two more this month: firstly, how about *Rambo III!?* This licence (not to be confused with any home format



Rambo III



Dynamite Duke

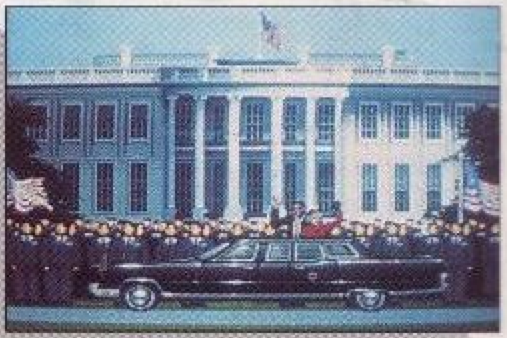


Spy

game of the same name) draws heavily on both the Cabal style of game play and the Op Wolf genre, yet turns out to be okay in its own way. The original touch is the use of digitised graphics in the attract modes and between levels – never (to my recollection) seen before. It does seem as though anything to do with Rambo sells like mad, so it will be interesting to see if the phlegmatic coin-op industry cedes to Stallone Fever!

Secondly there is a cute number called *Dynamite Duke*. This is more similar to *Dead Angle*, in that you have a view from behind your man, out into the world. Unlike Op Wolf this has the advantage that you can see the area you have to defend – your body – so you can dodge bullets much more easily.

Duke is set the impossible task of saving the world from clones, or something, being himself half-man, half-machine. Poor chap – that must explain all that latent aggresstion which comes out as he sprays the surroundings with hot lead. A good game. My forays around the country suggest that it is out there in numbers, so why not give it a try.



Secret Agent

Finally this month, the world of espionage has infiltrated the world of the coin-op in the shape of two games: *Secret Agent* from Data East and *Spy* from Konami. I must admit, I like Secret Agent best.

Data East has developed a nice graphic style for its last few games – *Dragon Ninja* and *Robocop*, for instance. This has been maintained in Secret Agent. Here you are trying to rescue the President of the United States, who has been kidnapped by terrorists. And a varied job it is too – skydiving, driving, motorcycling, scuba diving, the lot. A simple enough game, but good fun nevertheless.

Spy, in contrast – well, I just could not get into it. It does have the advantage of a two-player mode in which both of you put the boot in for some 'truth and justice' cause, but it did not seem to have the flair of its rival. Maybe it is one that grows on you, so I will try reporting back on it later. In any case, after *Thundercross* I could forgive Konami anything this year.

That is all for now. Hang loose until next month, give those aliens hell and if you happen to be playing pinball at any time, do not press both flippers at once, will you?

A fistful of RAM



In this month's Microscope, our resident boffin 'Clever' Trevor Cummings comes up with the goods once more as he tells you how to cram an extra 16K of RAM into your Amstrad CPC. Here's one he prepared before the show.

If you have a suitable romboard and you fancy writing your own ROM program then this project is for you. For a few pounds you will have 16k of RAM, called a RAM/ROM, which plugs into a spare slot in your ROM-board.

Because it is RAM you can write your program to it and then it will behave just like a ROM until you either re-write it or switch the computer off.

From the outset you will be able to test your developing ROM step by step, fix the bugs and test it again, without ever having to set up a programmer or erase an eprom.

Without it you have to write your program, blow it onto an eprom and test it to see if it works correctly. If it does not then you are back at the drawing board and your eprom needs erasing. In fact, the only time you will need an eprom programmer is when the program is finally finished, and even then, if you do not have one, Goldmark Systems (07072-71529) will do the job for you.

I am particularly pleased to write this project because of its usefulness. Two years ago the cost of memory chips soared to three or four times their previous level because of business practices in Japan and the USA. One effect was a rise in the price of the DK'tronics RAM packs. Another was that this project had to be shelved. Recently memory prices have fallen quite dramatically. The last to fall were the chips we need, and the project is now viable again.

The concept is not new. RAM/ROMs were an option for the Brittania and Amram boards. The only one still available is specially designed to plug into the small connector of the Rombo board. Normally costing £20, Rombo Productions are offering it at just £14.95 to accompany this project. (6 Fairbairn Road, Kirkton North, Livingstone, EH54 6TS. Tel 0506-414631.) I am indebted to them for permitting the use of their software for this project.

How it works

Two 8k static RAM chips are piggy-backed with all the pins except pin 26 (CE – active high) soldered together. They are mounted in a 28-pin socket and the whole unit is plugged into a ROM socket. A13 is fed from the romboard to pin 26 of the bottom chip, and a lead is taken from it to both inputs of a 2-input nand gate. This inverts A13 so that its output is fed to pin 26 of the top chip. ROMs are accessed at the 16k of addresses between COOO to FFFF: one 8k chip will therefore occupy the bottom half, COOO to DFFF, and the other EOOO to FFFF. If you look at these numbers in binary you will see that A13 is low for the bottom half and high for the top. When A13 is low, pin 26 on the bottom chip is low, and the chip is disabled. But A13 is inverted and fed to the top chip as a high signal, thus enabling it. When A13 is high, the

bottom chip is enabled and the top one disabled. So the top chip occupies COOO to DFFF and the bottom one EOOO to FFFF. Using address lines like this to select specific chips is common.

Both pins 27 write enable are soldered together and connected – via a 2k2 resistor – to 5v but they are not allowed to reach down to the ROM-board. Instead they go to a push button and on to the Z80's WR line. When the button is pushed all writing to the screen area – COOO – FFFF, which is parallel to the ROM area – will go to both the screen and the RAM/ROM. When the button is released, nothing can be written to the RAM/ROM. The rest of the pins are fed down to the ROMboard so that whenever the ROM, of the slot you have used, is addressed, it is the RAM/ROM which is accessed.

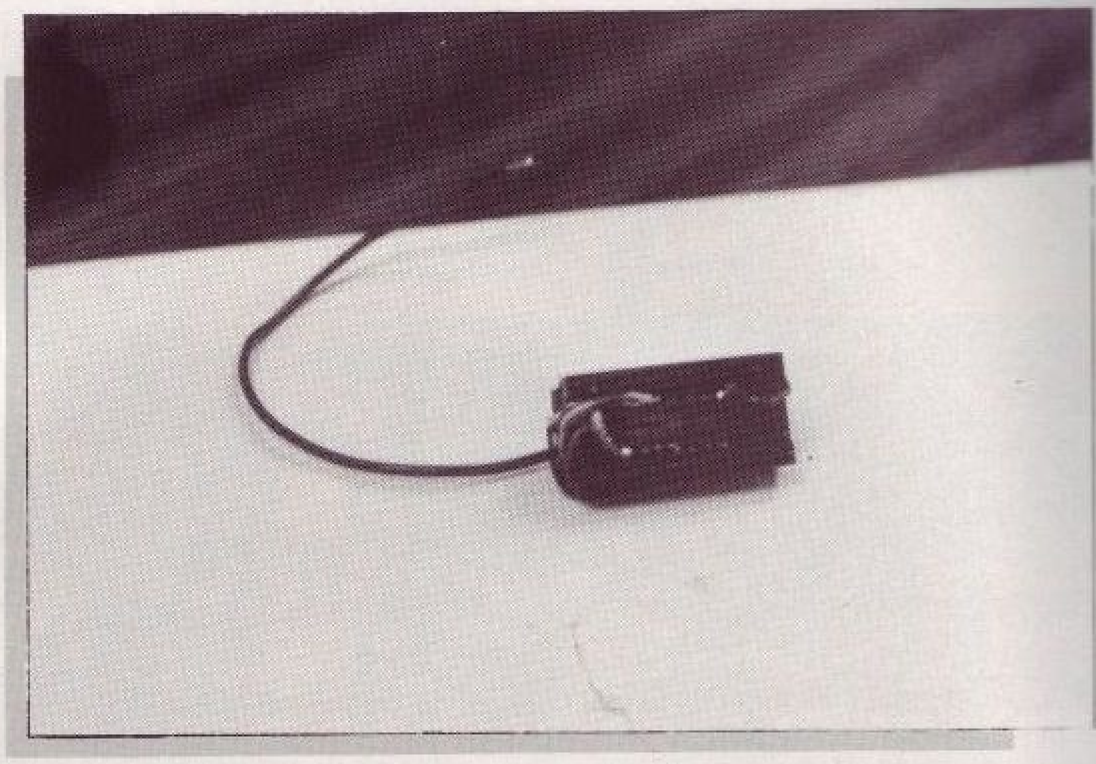
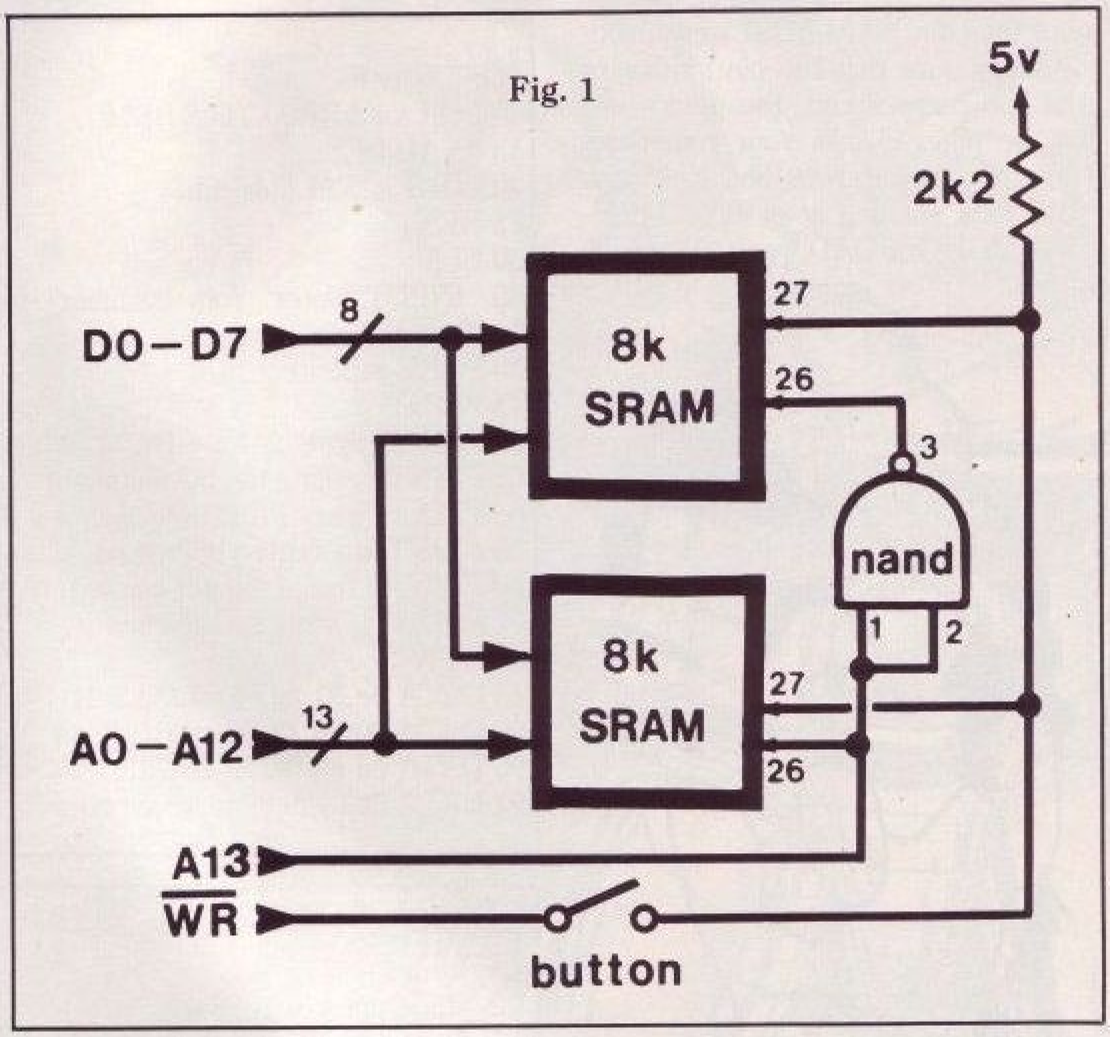


Fig. 1



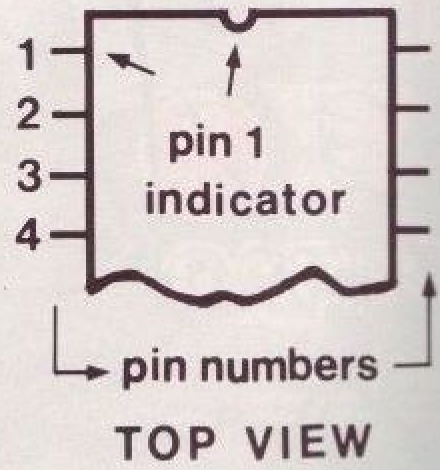
There are various ways of decoding ROM slots and enabling ROM chips. A signal produced by the CPC for the purpose is called ROMEN (ROM enable); it is used by the system to indicate a ROM access, and is made available on the expansion connector. Some boards are designed using ROMEN to enable ROM chips; others enable them without it but use it later in the circuit instead. We need to enable the RAM/ROM, for the write operation, when the system is not producing ROMEN and only those boards which use the signal later in the circuit are suitable. The following boards are known to be suitable for the RAM/ROM: Rombo, Amram, Brittania and Cirkit.

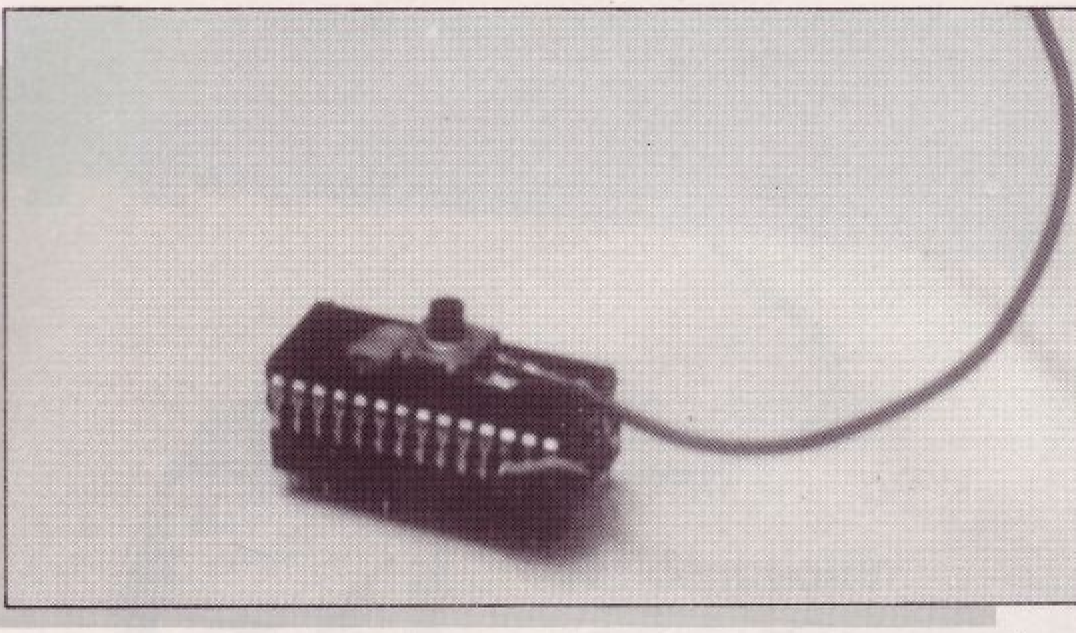
Construction

Piggy-back the two RAM chips by pushing one on top of the other, making sure that the pin 1 indicators are at the same end (Fig.2). Solder all pins of the top chip to the same pins of the bottom chip except pins 26, but do not allow the solder to run down the bottom pins; they need to fit well in the socket. Cut pin 26 of the top chip so that it cannot reach the bottom chip but leave enough of it to solder a wire to. Either cut pin 27 of the socket off or, better still, remove it, so that it cannot contact the romboard's socket. The space inside the socket is needed for the nand gate and resistor so if your socket has a cross-member in the middle, cut that out too. Solder a wire, a few inches long, to the top of each of the following: pin 28 (5v), pin 14 (0v), pin 27, pin 26 top chip and pin 26 bottom chip. Insert the chips into the socket.

To keep it all neat, the object now is to fit everything inside the socket with nothing sticking down to prevent a full insertion into the romboard's socket. To do this, cut all the nand gate's pins back so they are level with its bottom, turn the RAM assembly over and place the gate chip feet-up in the socket space. You can now see what you have to do. Pin 14 of the RAMS has to be soldered to pin 7 of the nand gate, pin

Fig. 2

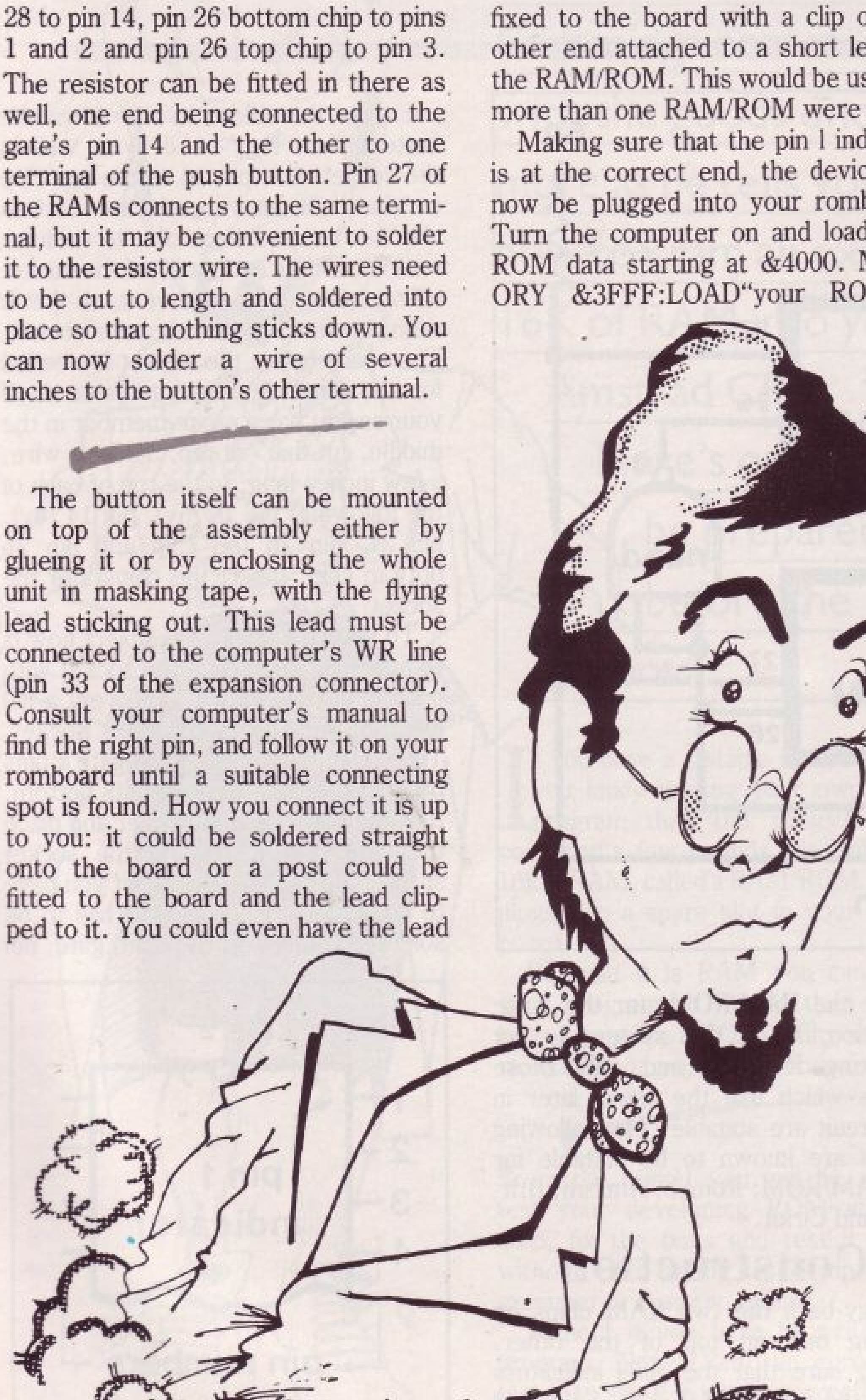




28 to pin 14, pin 26 bottom chip to pins 1 and 2 and pin 26 top chip to pin 3. The resistor can be fitted in there as well, one end being connected to the gate's pin 14 and the other to one terminal of the push button. Pin 27 of the RAMs connects to the same terminal, but it may be convenient to solder it to the resistor wire. The wires need to be cut to length and soldered into place so that nothing sticks down. You can now solder a wire of several inches to the button's other terminal.

The button itself can be mounted on top of the assembly either by glueing it or by enclosing the whole unit in masking tape, with the flying lead sticking out. This lead must be connected to the computer's WR line (pin 33 of the expansion connector). Consult your computer's manual to find the right pin, and follow it on your romboard until a suitable connecting spot is found. How you connect it is up to you: it could be soldered straight onto the board or a post could be fitted to the board and the lead clipped to it. You could even have the lead fixed to the board with a clip on the other end attached to a short lead on the RAM/ROM. This would be useful if more than one RAM/ROM were used.

Making sure that the pin l indicator is at the correct end, the device can now be plugged into your romboard. Turn the computer on and load your ROM data starting at &4000. MEMORY &3FFF:LOAD"your ROM",&4000 will do it. Run the Basic program. You will be asked which ROM slot you wish to write to. You must enter the one where your RAM/ROM is installed but you cannot use slot 0 (used by Basic) or slot 7 if you have a disc drive. Instructions will then appear on the screen. As the RAM/ROM is loading the screen will fill up. When it is full, release the button and reset the computer. The loader program will remain intact for further RAM/ROM loading and your ROM will be ready for use. One word of caution. Many static RAMs are CMOS devices and can be damaged by static electricity: to be on the safe side, avoid handling the pins whenever possible. This does not mean one touch and they are dead. It does mean, however, that they should be handled with caution.



```
SOFTWARE
10 FOR x=&BE00 TO &BE1F
15 READ b$
20 POKE x,VAL("&"+b$)
25 NEXT
30 CLS
35 INPUT"Enter rom number to load";a
40 POKE &BE01 ,a
45 PRINT
50 PRINT"Type CALL &BE00. While
55 PRINT"holding the button down
60 PRINT"press RETURN. Release
65 PRINT"the button before READY
70 PRINT"prompt. Reset computer
75 PRINT"to initialise the rom.
80 NEW
85 DATA 0e,01,cd,0f,b9,f3,c5,21
90 DATA 00,40,11,00,c0,01,00,40
95 DATA ed,b0,06,10,1b,7a,b3,20
97 DATA fb,10,f9,cl,cd,18,b9,c9
```

PARTS LIST

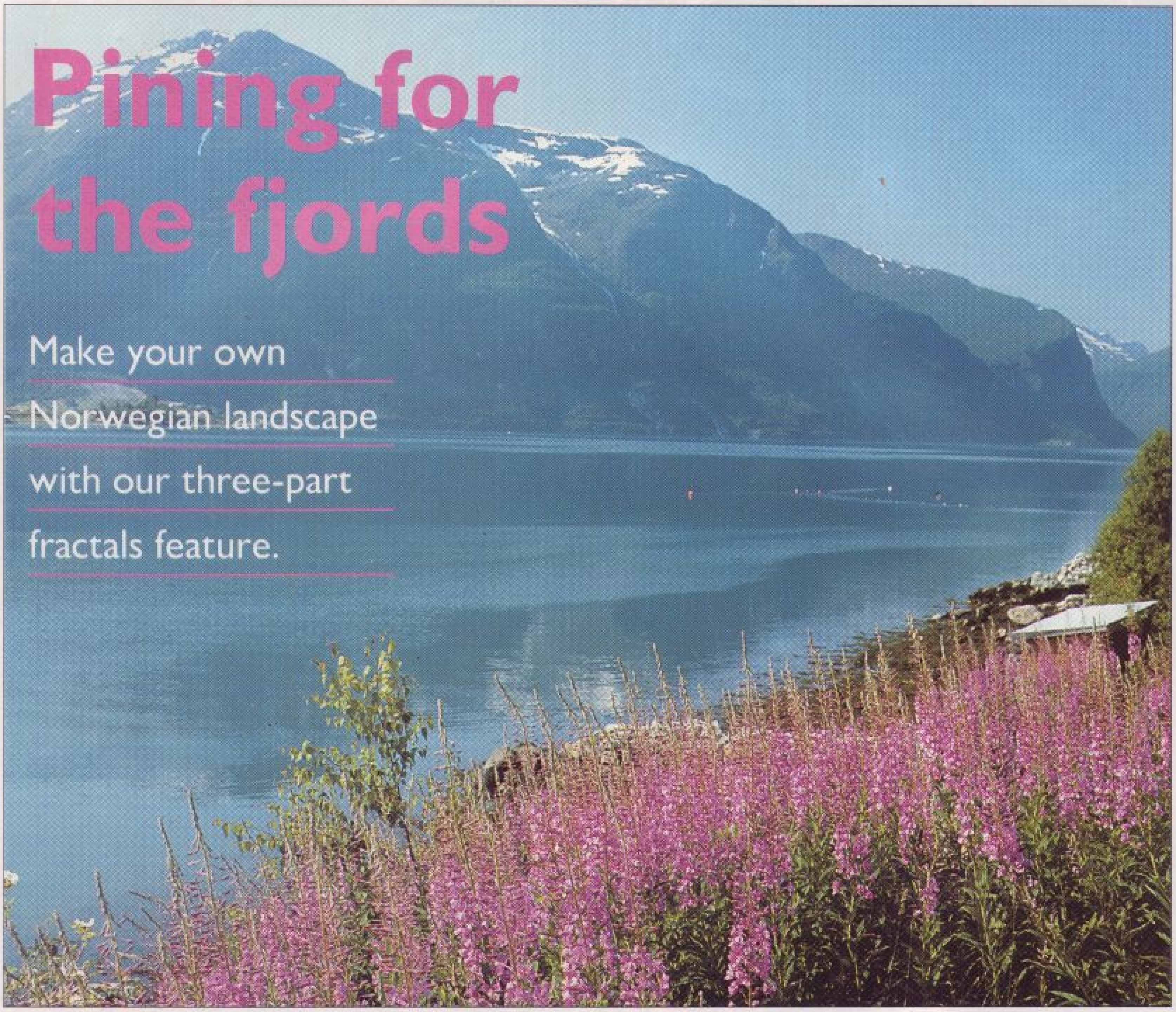
Qty	Item
2	static rams 8k (6264)
1	i/c socket 28 pin
1	push button
1	resistor 2k2
1	quad 2 input nand gate (74LS00)
	wire

At the time of writing the retail prices of ram chips have not caught up with the new reductions. I suggest one or two enquiries to people like Maplins and Tandy for their latest prices. To make things a little simpler we have arranged for a full kit of parts, costing £9.50, to be available from Microstyle, 212 Dudley Hill Road, Bradford, BD2 3DF. Tel 0274-636652.


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Pining for the fjords

Make your own Norwegian landscape with our three-part fractals feature.



The next time you are passing through Norway on your way to the shops, take a good close look at the fjords because they are well worth the visit. Amazingly, no matter how closely you look at them, they still have crinkly edges, and these all look like smaller fjords.

If you were of a mind to create fjords of your own, there are two ways of going about it. The first involves rubbing large amounts of rock, sea and ice together for a few million years (but more often than not, you will only end up with cold, muddy seawater). The second approach is to take a computer, like a CPC, apply fractal transformations to some random numbers and within minutes: fjords.

The magic word here of course is "fractal". This is a very simple animal which produces very complex patterns and which has become synonymous with computer graphics. You may have already seen the Mandelbrot set and Dragon curve programs and may have played games like *Koronis Rift, Sentinel,* or more recently, *Captain Blood*, which all feature fractal landscapes.

Fractals are shapes that are produced by repeatedly applying a series of rules to a simple shape; the more often you apply the rules, the more complex the shape becomes, revealing more detail and allowing you to look more closely at the shape.

If small errors creep into the calculations, the pattern will quickly deviate from the original shape, producing a new, but still related shape. Take two points (A and B), for example, and give each a random height (height A and height B).

Next we need to invent a rule for creating a new height for the point midway between them. "At the midpoint the new height is the average of the two original heights", for instance. This will now give us three points; the second application makes five points; the third, nine, and so on. Thus each time the rule is applied new points are created, this could carry on until there are an infinite number of points and the distance between them is so small as to be unmeasurable.

Program 1 illustrates this technique, because as we are plotting the results to the screen, the progam will stop when the distance between two points is "1". The WHILE…WEND loop steps through the array, halving the STEP size for the FOR…NEXT loop, halving the distance between the points. Type in this listing and save it as "prog1.bas".

When this program has been entered, saved and run, enter a number for the random number seed which will be used to generate two random points (5 has been used in the example). As you will see, the effect is to draw a straight line between the two points. (Incidentally, this is a faster method than those traditionally used by line-drawing routines, but it is

never used because each point on the line has to be held in an array – which is generally impractical.) This does not look like a landscape, however, so a small random error is added to the calculation each time and the effect is somewhat different. To see this, change line 1150 to read:

1150 height[midx]=(height[midx-half] + height[midx+half])/2 + (1-2*RND)*10

Save the modified program and run it. The line now changes into one that randomly weaves around the original. Unfortunately, this line is very erratic and still does not resemble any natural geological occurrence. So now we make smaller the amount of error that we add for points that are closer together. We do this by changing line 1150 again, so that it now reads:

1150 height[midx]= (height[midx-half] + height[midx+half])/2 + (1-2*RND)*maxh

and by changing line 1180 as well to read:

1180 midpoint=half: maxh=maxh / 2

Finally we have a smooth random curve that could easily be used to represent the horizon of an imaginary landscape. The results of all three versions of the program are shown in Fig. 1. Now we can state our refined rule: "At the midpoint the new height is the average of the two original heights, plus some error, which is proportional to the distance between them." This looks like:

$$\text{height } M = \frac{\text{height } A + \text{height } B}{2} + \text{RAND (distance B – distance A)}$$

All that is needed now is to use this

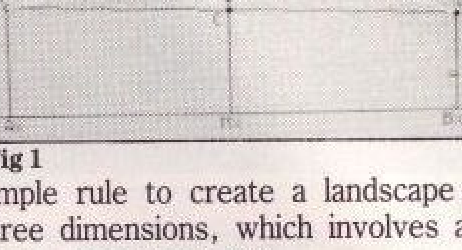


Fig 1

simple rule to create a landscape in three dimensions, which involves adding a second axis (Y).

In the three-dimensional program, Program 2, for each pair of points that make up the line in Program 1, we are now considering four points that make up a square, and calculating the midpoints of each edge and of the centre (a,b,c,d and m of Fig. 2). The subroutine "sub 1" calculates these midpoints, and the WHILE...WEND loop and the pair of FOR...NEXT loops ensure that these are calculated for all points in the array – in much the same way as in Program 1.

```
1000 ' 2-D Fractal Landscapes
1010 ' Program 1
1020 '
1030 '
1040 DEFINT a-z: INPUT "Enter Seed:";iseed
1050 MODE 0: xscale=4: RANDOMIZE (PI+iseed\PI): PRINT "Seed = ";iseed
1060 size=128: DIM height[size]: maxheight = 400/4
1070 height[0]=maxheight+RND*maxheight
1080 MOVE 0,0: DRAWR 0,height[0],1
1090 height[size]=maxheight+RND*maxheight
1100 MOVE size*xscale,0: DRAWR 0,height[size]
1110 midpoint=size: maxh = maxheight
1120 WHILE midpoint>1
1130  half=midpoint/2
1140  FOR midx=half TO size-(half) STEP midpoint
1150   height[midx]=( height[midx-half] + height[midx+half] )/2 +(1-
     2*RND)*half
1160   PLOT midx*xscale,height[midx],4
1170  NEXT
1180 midpoint=half
1190 WEND
1200 END
```

```
1000 ' 3-D Fractal Landscapes
1010 ' Program 2
1020 '
1030 '
1040 DEFINT a-z: INPUT "Enter Seed:";iseed
1050 GOSUB 1380: MODE 0: xscale=4: yscale=2: RANDOMIZE (PI+iseed\PI):
     PRINT "Seed =";iseed
1060 size=64: DIM height[size,size]: maxheight=400/2
1070 GOSUB 1300 ' prime corners
1080 midx=0: midy=0: midpoint=size: maxh=maxheight/4
1090 WHILE midpoint>1
1100  half=midpoint/2
1110  FOR midy=size-half TO half STEP -midpoint
1120   FOR midx=half TO size-(half) STEP midpoint
1130    GOSUB 1440 ' calculate fractals
1140   NEXT
1150  NEXT
1160  midpoint=half: maxh=maxh / 2
1170 WEND
1180 GOSUB 1500
1190 END
1200 ' sub 1
1210 ' put number into array and plot value
1220 '
```

```
1230 IF height[dx,dy]<>0 THEN GOTO 1260
1240 height[dx,dy]=r: ik=r \ (maxheight/15)+1
1250 PLOT dx*xscale,dy*yscale,ik
1260 RETURN
1270 ' sub 2
1280 ' prime corners
1290 '
1300 dx=0:    dy=0:    r=RND*maxheight/2: GOSUB 1230
1310 dx=0:    dy=size: r=RND*maxheight/2: GOSUB 1230
1320 dx=size: dy=0:    r=RND*maxheight/2: GOSUB 1230
1330 dx=size: dy=size: r=RND*maxheight/2: GOSUB 1230
1340 RETURN
1350 ' sub 3
1360 ' set inks
1370 '
1380 FOR i=0 TO 15: READ j: INK i,j: NEXT
1390 DATA 13,0,1,2,5,11,3,9,10,18,21,19,20,23,24,26
1400 RETURN
1410 ' sub 4
1420 ' calculate midpoint fractals
1430 '
1440 dx=midx: dy=midy-half: r=(height[dx-
    half,dy]+height[half+dx,dy])/2+2*(RND-0.5)*maxh: GOSUB 1230
1450 dx=midx: dy=midy+half: r=(height[dx-
    half,dy]+height[half+dx,dy])/2+2*(RND-0.5)*maxh: GOSUB 1230
1460 dx=midx-half: dy=midy: r=(height[dx,dy+half]+height[dx,dy-
    half])/2+2*(RND-0.5)*maxh: GOSUB 1230
1470 dx=midx+half: dy=midy: r=(height[dx,dy+half]+height[dx,dy-
    half])/2+2*(RND-0.5)*maxh: GOSUB 1230
1480 dx=midx: dy=midy: r=(height[dx-
    half,dy]+height[dx+half,dy]+height[dx,dy+half]+height[dx,dy-
    half])/4+2*(RND-0.5)*maxh: GOSUB 1230
1490 RETURN
```

```
1500 ' sub 5
1510 ' isometric projection
1520 '
1530 FOR j= size TO 0 STEP -1
1540  FOR i=0 TO size
1550   r=height[i,j]: ik=r \ (maxheight/15)+1
1560   MOVE 300+(i-j)*xscale/2,128+(i+j)*yscale/2,ik
1570   DRAWR 0,height[i,j]
1580  NEXT i
1590 NEXT j
1600 RETURN
```

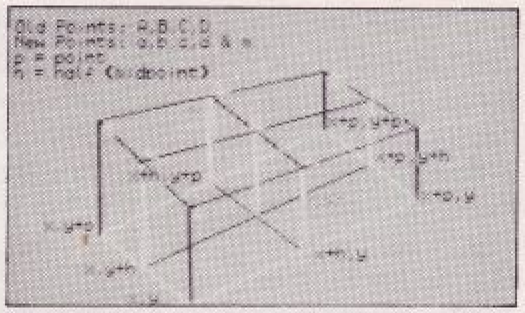


Fig 2

On running this program, a pattern will build up; long before it is complete, you will be able to determine the general shape; and as the program progresses, more detail will be added. If you increase the 'size' of the landscape, even more detail will be revealed. If we imagine that all the black and blue areas here are seas and the green and brown regions are land



Fig 3

masses, the final image looks convincingly like a contour map, the coastline having the characteristic crinkliness of a Norwegian fjord. (Change the variable 'size' to 128 to produce Fig. 3. This will take some time to plot.)

To view this map in a three-dimensional isometric form like those used to illustrate geography text books, add Subroutine 5 to the end of the program.

The result of this additional routine is shown in Fig. 4; although lacking in

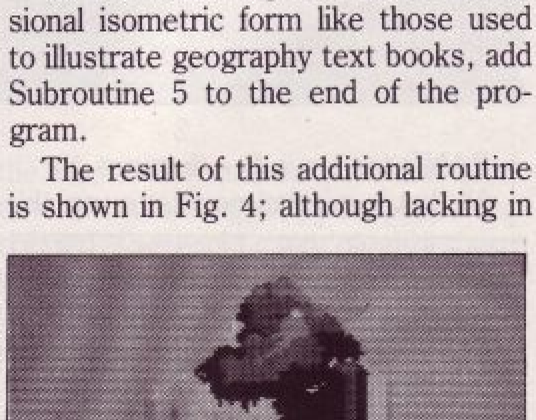


Fig 4

perspective, it does resemble a section of a landscape.

The slow Basic routine for calculating the fractal will be replaced next month by a faster machine code version, and the beginnings of the *Landscape Generator Program* will start to emerge. The following month will see the isometric projection routine of Subroutine 5 converted into a true perspective image. Experiment with the routines in the meanwhile, and see what can be achieved by modifying the program.

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FOOTBALL & TAG

BY ROBERT FIFIELD

This may not look like a 10-liner but it is in fact two games in one. Both games use the same main code for the unusual character movements. Each of these games requires two players.

In the football game you must guide the ball into the opponent's net. This is not as simple as it sounds because the players move as though they are on ice. The second game is 'tag'. The player who is flashing is *it* and must touch the other player to pass *it* on.

Controls for both games are as follows. Player one A = up, Z = down, X = left and C = right. Player two uses the cursor keys.

```
100 WHILE INKEY$<>"":WEND:MODE 1:INK 1,24:INK 2,13:INK 15,26,14:SPEED INK 40,40:
BORDER 16:DEFINT a-z:o=2:m=1:n=15:j=m:k=n:e=100:f=200:g=500:h=f:u=300:v=h:ENV 1,
3,5,1,9,-1,2:ENT 1,4,5,1,8,-3,2:LOCATE 5,10:INPUT "PLAY TAG:(1) OR FOOTBALL:(2)"
;p [8D]

110 PRINT CHR$(23)+CHR$(1):MODE 0:IF P=1 THEN O=2:S=79:t=64:TAG ELSE WINDOW #2,2
,19,2,24:PAPER #3,2:PAPER #2,0:CLS #3:CLS #2:o=5:S=248:t=s:FOR AA=19 TO 32:LOCAT
E (aa MOD 2)*19+1,AA/2:PRINT CHR$(127):NEXT:TAG [DC]

120 IF INKEY(69)=0 AND b<12 THEN b=b+o ELSE IF INKEY(71)=0 AND b>-12 THEN b=b-o
[13]

130 IF INKEY(63)=0 AND a>-12 THEN a=a-o ELSE IF INKEY(62)=0 AND a<12 THEN a=a+o
[F7]

140 IF INKEY(0)=0 AND d<12 THEN d=d+o ELSE IF INKEY(2)=0 AND d>-12 THEN d=d-o [8
1]

150 IF INKEY(1)=0 AND c<12 THEN c=c+o ELSE IF INKEY(8)=0 AND c>-12 THEN c=c-o [A
2]

160 IF f<12 THEN b=-b:f=14 ELSE IF e<0 THEN a=-a:e=2 ELSE IF f>398 THEN b=-b:f=3
96 ELSE IF e>614 THEN a=-a:e=612 [87]

170 IF h<12 THEN d=-d:h=14 ELSE IF g<0 THEN c=-c:g=2 ELSE IF h>398 THEN d=-d:h=3
96 ELSE IF g>614 THEN c=-c:g=612 [EF]

180 oi=og:oj=oh:ox=oe:oy=of:x=e:y=f:x2=g:y2=h:xv=a:yv=b:x2v=c:y2v=d:GOSUB 230:g=
x2:h=y2:c=x2v:d=y2v:og=oi:oh=oj:r=m:z=t:GOSUB 240:e=x:f=y:oe=ox:of=oy:x=g [EB]

190 y=h:a=xv:b=yv:ox=og:oy=oh:r=n:xv=c:yv=d:z=s:GOSUB 240:g=x:h=y:og=ox:oh=oy:c=
xv:d=yv:IF p=1 THEN 120 ELSE IF (u<32 OR u>580) AND (V>154 AND V<261) THEN MOVE
434-(u/1.5),350:PRINT"WINNER";:FOR a=1 TO 3000:NEXT:RUN [B4]

200 IF VV>8 OR VV<-8 THEN VV=VV*0.8 ELSE IF Uv>8 OR Uv<-8 THEN Uv=Uv*0.8 ELSE IF
 u<32 THEN UV=-UV:u=32 ELSE IF v<32 THEN vv=-vv:v=32 ELSE IF u>580 THEN UV=-UV:U
=580 ELSE IF v>384 THEN vv=-vv:v=384 [4F]

210 x=u:y=v:x2=e:y2=f:x2v=a:y2v=b:xv=uv:yv=vv:GOSUB 230:E=x2:F=y2:a=x2v:b=y2v:x2
v=c:y2v=d:x2=G:y2=H:GOSUB 230:G=x2:H=y2:C=x2v:D=y2v:oy=ov:ox=ou:z=111:r=3:GOSUB
240:ov=oy  [38]

220 ou=ox:u=x:v=y:uv=xv:vv=yv:GOTO 120 [4E]

230 IF x-34>x2 OR x+34<x2 OR y-16>y2 OR y+16<y2 THEN RETURN ELSE SOUND 1,100,20,
0,1,1:i=yv:yv=y2v:y2v=i:i=x2v:x2v=xv:xv=i:x=x+8*SGN(x-x2):y=y+8*SGN(y-y2):IF p=1
 THEN i=j:j=k:k=i:INK j,24:INK k,26,14:RETURN ELSE RETURN [22]

240 y=y+yv:x=x+xv:PLOT ox,oy,R:PRINT CHR$(z);:PLOT x,y,r:PRINT CHR$(z);:ox=x:oy=
y:RETURN [16]
```

TRIANGLES
BY DANIEL JANKOWSKI

Run this program and watch the dots appear. After a while you begin to see that this is more than a simple triangle.

```
1 REM NB:It takes time!! [36]

10 MODE 2:BORDER 0:INK 0,0:INK 1,26:DIM x(5):CLS:LOCATE 45,8:PRINT "Triangles (D
J 1989)"    [0D]

20 LOCATE 45,9:FOR n=1 TO 19:PRINT CHR$(154);:NEXT    [4D]

30 PLOT 200,150:PLOT 50,350:PLOT 300,350         [02]

40 n=300:m=250:x(1)=175:y(1)=35:x(2)=50:y(2)=350:x(3)=300:y(3)=350 [8E]

50 k=INT(RND*3)+1   [B4]

60 IF x(k)>n THEN a=(x(k)-n)/2 ELSE a=(n-x(k))/2     [15]

70 IF y(k)>m THEN b=(y(k)-m)/2 ELSE b=(m-y(k))/2    [46]

80 IF x(k)<n THEN LET a=a+x(k) ELSE LET a=a+n  [E7]

90 IF y(k)<m THEN LET b=b+y(k) ELSE LET b=b+m    [55]

100 PLOT a,b:n=a:m=b:GOTO 50 [B7]
```

RALLY
BY ROBERT FIFIELD

Put the pedal to the metal and tear down this computer generated track avoiding the boulders and close encounters with the walls. Move your car left and right as the track scrolls up the screen by using Z for left and / for right movements.

```
10 RESTORE 10:INK 0,0:MODE 1:DEFINT A-Z:FOR O=&8000 TO &8005:READ P:POKE O,P:NEX
T:X=300:OX=X:A=260:SC=0:d=4:TAG:SYMBOL 250,90,126,90,24,90,126,90,24:DATA 62,215
,205,77,188,201 [43]

20 WHILE TEST(ox+8,284)=0:PLOT OX,300,1:PRINT" ";:CALL &8000:PLOT X,300:PRINT CH
R$(250);:OX=X [03]

30 IF NOT INKEY(71) THEN X=X-7 ELSE IF NOT INKEY(22) THEN X=X+7 [22]

40 SOUND 1,2000,11,11:C=RND*10:IF C<2 THEN B=10-RND*20 [78]

50 IF D<>B*0.8 THEN D=D+SGN(ABS(B)-D):IF D<2 THEN D=2 [EB]

60 IF B+A<80 OR B+A>500 THEN B=-B [17]

70 MOVE A-(ABS(d)-3)*8,16:PRINT STRING$(d," ");:a=a+b:IF sc MOD 10=0 AND d>2 THE
N PLOT A+CINT(RND*(d-3))*16,20,RND*2+1:PRINT CHR$(231); [26]

80 sc=sc+1:IF sc MOD 10=0 THEN MOVE 10,32:PRINT SC/10;:IF sc MOD 100=0 THEN POKE
 &8001,15*CINT(RND*16) [94]

90 WEND:sc=sc/10-1.7:HSC=MAX(SC,HSC):MOVE 60,50:PRINT"DISTANCE";SC;"KM  FARTHEST
";HSC;"KM"; [47]

100 FOR O=1 TO 50:PLOT oX+18-20*RND,302-20*RND,RND*3+1:SOUND 1,100+O*20,3,15-o\7
,0,0,26-O/5:NEXT:WHILE INKEY$<>"":WEND:CALL &BB18:GOTO 10 [FB]
```

Making a mark

Adrian Pumphrey took a trip to Putney to meet those rather strange chaps from Domark.

Every company has to start somewhere and since its creation in 1984 Domark has been growing steadily. Although not one of the industry giants, it is getting there. The company is run by two men of diverse talents: Dominic Wheatley and Mark Strachan. The unusual company name is an amalgamation of their two first names.

Both partners started from non-computer related industries with little or no real knowledge of computers. Dominic was in the Irish Guards and did his stint outside the Palace and Mark worked his way through several management positions in a brewery. Later both moved into the advertising industry where they met for the first time.

It was while thinking up a promotional exercise to promote computer hardware that they hit upon the idea that launched Domark. The idea turned out to be Eureka, a huge game with a £25,000 completion prize. Although this game was not the huge success that Domark had hoped for it still made enough to ensure that a new software house was born.

They then hit it lucky with the licence to the James Bond film *A View to a Kill*. Unfortunately this game ran into trouble from the word go. They listened to the programmers and took everything at face value. Programmers do tend to stretch the truth a little and as a result the planned game became unfeasible and very late.

When the game was finally launched it failed miserably but Domark learnt from their mistakes and now use a ball and chain on programmers. The next big licence, and the game that made Domark, was *Trivial Pursuit*. Following close on the heels of this success came *Star Wars*. Although an old arcade game it converted so well it was an instant success. Plus a few assorted television licences such as *Krypton Factor, Block Busters* and *Treasure Hunt*.

Over the years Domark acquired more Bond licences (and produced better versions), as well as the licence for a Spitting Image game. The acquisition of licences hit an all-time high recently as Domark acquired the licence for the Tengen arcade games for a three year period. Domark's Tengen releases so far include *APB, Dragon Spirit,* and *Vindicators* with a hopeful Christmas number one in prospect with *Hard Driving*, and next year *Toobin*.

Judging by their past record it seems that Domark only do licences but as Mark Strachan says, "All the associated publicity and hype helps to sell the games." Although Domark is looking at a few areas to branch into, it intends to stick with publishing because as Mark says, "publishing is fun." The grandfather of Dominic is none other than the master of horror, Dennis Wheatley. Dominic and his father own the company that owns the licenses to the Dennis Wheatley books. So in future don't be surprised if you see a few horror titles with the Domark name on the cover and a few arcade and adventure games based upon the books.

The Domark office in Putney in south London is currently overrun with arcade machines from Tengen. This may be great for the twenty or so people working there but it doesn't do a lot for the productivity. Not that the outside view is likely to inspire as a gigantic shopping complex is being built next door. Despite this a quiet corner can be found and is usually occupied by some games tester or a pile of the next Domark releases.

Domark is still a relatively small company but if it continues at its present rate of expansion it is sure to become one of the industry giants. Despite its size Domark is determined to retain its identity and refuses to become a mere branch of a larger company. The competition may be tough but Domark are confident.

If you ever need to deal with the PR and promotional side of Domark you will see (or talk to) one Clare Edgeley. Before working at Domark Clare spent many happy years at Rainbird but left just before the buy-out by Microprose. Clare is also the author behind a Combat Zone style feature in another magazine.

Domark's plans for expansion took a leap forward recently as they signed a distribution deal with the American company Broderbund. The deal allows Domark to distribute Broderbund software in the U.K. and Broderbund to distribute Domark software in the States. At this rate Domark will soon be leading the software publishing field.



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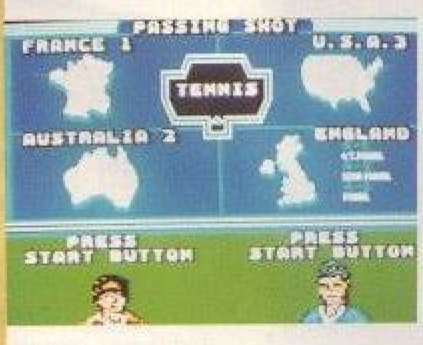
This month we take to the roads with a preview of *Test Drive II – The Duel*. A Ferrari F40 races against a Porsche 959. Stir up your adrenalin with the mega-blast *Dragon Spirit* and haul over the crooks with *APB*.

GAMEPLAN



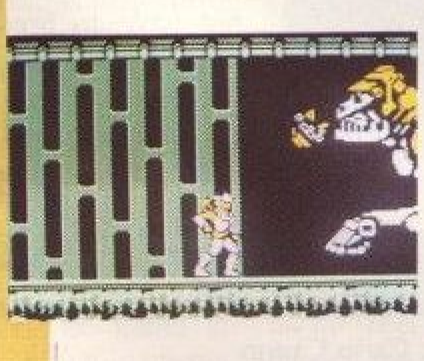
TEST DRIVE II - THE DUEL

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Step into mother Russia in the guise of a ninja to confront the might of the Russian army.

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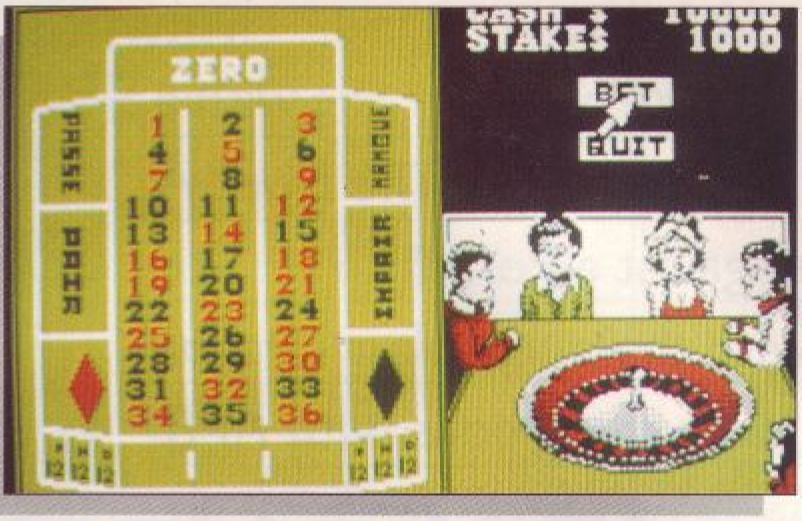
Mission Omega, Knight Games, and Monte Carlo Casino.

TOP 20

1	(1)	Robocop	Ocean
2	(3)	Mig-29	Code Masters
3	(2)	Twin Turbo V8	Code Masters
4	(4)	Daley Thompson's Decathlon	Hit Squad
5	(NE)	Yie Ar Kung Fu	Hit Squad
6	(NE)	Green Beret	Hit Squad
7	(8)	Enduro Racer	Hit Squad
8	(NE)	Monte Carlo Casino	Code Masters
9	(NE)	Pro Powerboat Simulator	Code Masters
10	(5)	Fast Food	Code Masters
11	(20)	Crazy Cars 2	Titus
12	(NE)	Crazy Cars	Hit Squad
13	(NE)	Tom Cat	Players
14	(13)	Dragon Ninja	Ocean
15	(NE)	Jack the Nipper	Kixx
16	(9)	Rambo	Hit Squad
17	(NE)	Masters of the Universe	Kixx
18	(15)	Emlyn Hughes Int. Soccer	Audiogenic
19	(11)	Army Moves	Alternative
20	(NE)	Moto X Simulator	Code Masters

Last month's position in brackets
Top 20 compiled by Gallup

Ever since time immemorial struggling programmers, and some might say talentless as well, have produced fruit machine games. The temptation to simulate those spinning fruits is almost irresistible if you can scroll a screen, or to produce filled polygons rotating around far-flung star systems. I will even admit to doing it myself.



Monte Carlo Casino

Have a go at breaking the bank at Monte Carlo without breaking into your own piggy bank.

The trouble is that this is all you usually get. The same can be said of card games and dice games. Code Masters, renowned for its budget offerings, has gone the whole hog, slapping five gambling games together for the measly sum of £2.99. And what is almost as good is that this is not a multi-load affair; once the program is in, that is it! A bright and clear graphical menu, accompanied by a fitting jingle, offers five pursuits of ill repute for your delectation.



The fruit machine is there, of course. Not a particularly feature-laden one, but the graphics are okay, and the reels spin in a reasonably convincing manner. The objective of the entire package is to make one million dollars, and thus presumably break the bank, though I think a Monte Carlo casino would have far more than that in the coffers. This might sound like it is going to take a very long time if you are only sticking ten pences into a fruit machine, but fear not, the stakes are much higher than that: one thousand dollars to be precise.

Probably the most disappointing game of the lot is the roulette table, which operates in an unconventional manner, and which does not really inspire a great belief in actually being there. The system of placing bets does not follow official procedure either.

Never mind, I enjoyed playing poker, a game enlivened by pictures of the players sat around the table, with plenty of amusing little touches. All something of a send-up of the Cincinnati Kid methinks.

Craps might sound like something you would suffer from after drinking Spanish tap water, but it is in fact an American dice game. If you do not know how to play, do not worry; this and the other games are explained on the cassette inlay. It is reasonably entertaining to play as well.

Reckoning myself as some kind of card sharp, I set out to destroy the bank by playing blackjack. A simple and easy game, and one which depends on nerve and luck. I had the former but not the latter. Oh well, back to sweeping the roads.

Monte Carlo Casino may not offer anything new, but it does offer all those gambling games in one shot, without the need to reload. And the graphics, if not spectacular, are well thought out and in places humorous. The music is surprisingly good considering the subject matter, so you have the prolific David Whittaker to thank for that.

I did not break the bank at Monte Carlo, but then I did not have to break into my piggy bank to be able to pay for this well-presented and varied collection.

Mark Luckham

ROUND-UP			
NAME	Monte Carlo Casino		
SUPPLIER	Codemasters	PRICE	£2.99
74%	78%	82%	80%
GRAFFIX	SONIX	PLAYABILITY	OVERALL



Knight Games

Two guys beat the hell out of each other at the medieval equivalent of the Millwall Supporters' Club.

A hard day's knight, a knight to remember, a knightmare on Elm Street . . . ah, the gags are endless. All have been used to some degree in the past to describe *Knight Games,* which is now being released by Virgin-Mastertronic as a budget title.

Originally a big hit on other formats, the CPC version boasts similarly impressive graphics, but falls down woefully in the gameplay department.

This is the time when men were real men, women were real women, and two guys beat the hell out of each other at the medieval equivalent of the Millwall Supporters' Club. The events are sword fighting, quarterstaff, archery, ball & chain, swordfight 2, pikestaff, crossbow, and axeman. The game is multi-load, which means that once the menu is loaded, there are eight lots of loading necessary to get through the rest of the games. Very tedious.

All the events follow the same pattern: you fight against an opponent while a candle slowly melts. Very slowly if you ask me! There is no real sense of great danger, as in *Barbarian* for instance, because you have ten energy points per life, and umpteen lives.

The moves are not explained, apart from indications as to whether they are offensive or defensive, and as they are all slow and involve a lot of posturing, it is hard to see which is the better. Well, that is not quite true for the first two events; they play exactly the same – just hold down the fire button and move to the right, and you will always beat your opponent.

The archery event involves loosing arrows at a horse, using your wobbling crosshair. They hit the horse's behind if you have timed it correctly. Fine, if the event did not drag on for half an hour, but that is what it feels like. A perfectly good idea is ruined by the implementation. The same applies to the crossbow, which involves shooting at spinning targets, but again, ad nauseam.

The other combat events are all the same as each other; there are just changes of scenery, and slight changes of tactics. When finally the axeman cometh in the final game, you will either be breathing a sigh of relief, or will have fallen asleep.

One of the few saving graces is that two players can indulge in chivalrous thuggery together. The second player can frantically thump the keypad but it is horribly awkward to play with.

Of the lot I suppose the pikestaff and ball and chain are slightly better events than the rest, but it is all much of a muchness. The graphics are good in virtually all of the games, and there are some good little medieval tunes scattered about, but unrelenting boredom ruins it all. This was a knightmare from which I was glad to wake up.

Mark Luckham



ROUND-UP			
NAME	Knight Games		
SUPPLIER	Virgin – Mastertronic	PRICE	£2.99
88%	76%	31%	41%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

Mission Omega

Guide a team of droids round an alien complex and save the earth from the threat of nuclear holocaust.

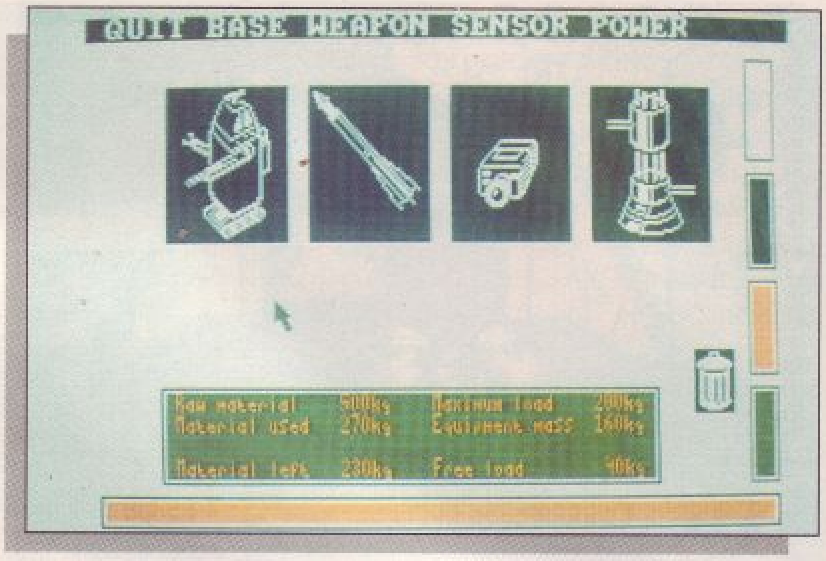
When an object the size of a small moon winds its way through the universe towards Earth, the immediate human response is to nuke it. We would all be bathing in its radioactive debris at this very moment if some wishy-washy liberal had not decided to send up a probe instead.

As the human component of the probe you must create and guide a team of droids around the alien complex searching for reactors to shut down, thus ending the alien threat (imaginary or otherwise). Before exploration of the complex can begin you must build yourself a squad of mechanical men who will go forth and get blasted, irradiated, crushed and generally mistreated in your stead.

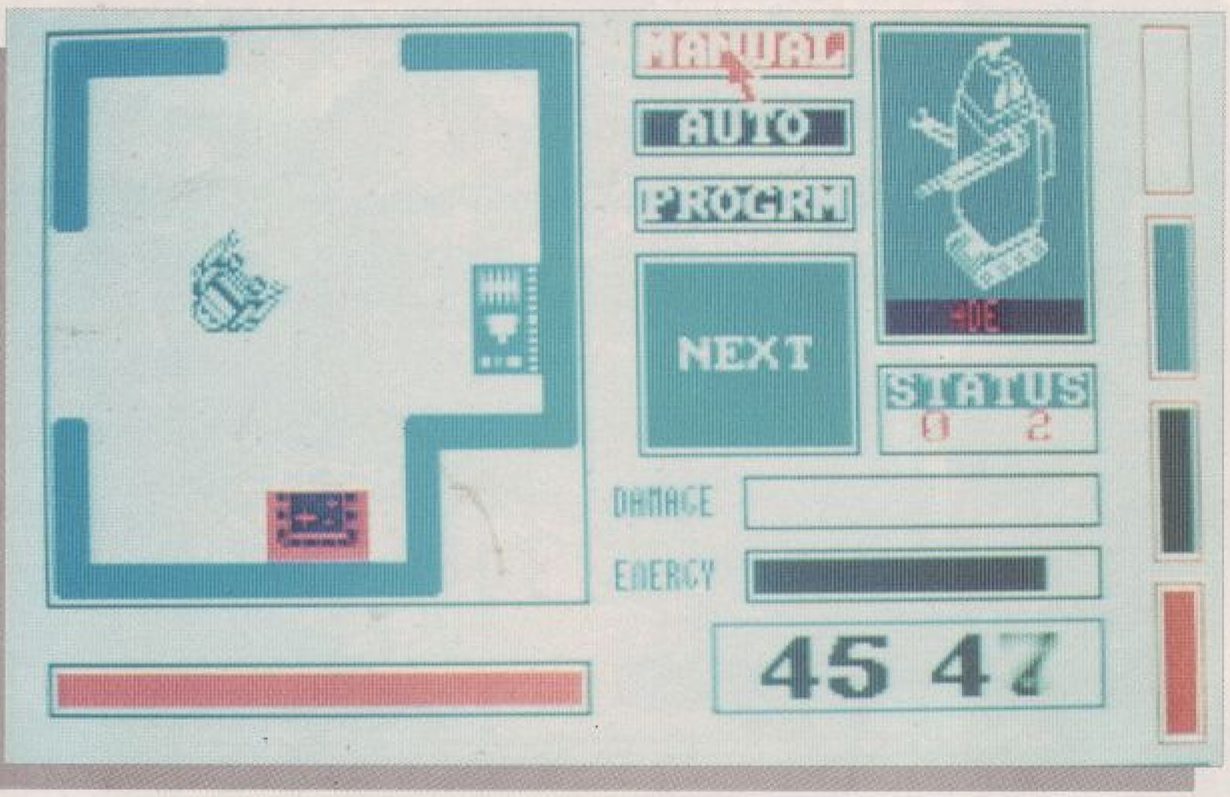
You start by selecting a body. This can be anything from a lightweight hover to a heavy-duty tank; the bigger the body, the heavier the weapon it can carry. The various types of laser and particle cannons not only inflict varying amounts of damage but use different amounts of your precious energy supply. This brings us to the power plant which can be either one of two sizes of battery or nuclear.

Once your droid has been named it can be released to boldly go wherever droids go when they are feeling bold. Each droid body has its own individual graphical representation but, apart from this, the only difference between them is their energy level and how big a punch they pack.

A small section of the screen is devoted to a page flipping aerial view of the droid you are controlling. This display shows the room and corridors plus the occasional piece of animated machinery which surround the droid. Most of the machinery encountered is for effect, and only a few pieces can be used. Teleporters are an efficient method of travel and often take the player to areas otherwise inaccessible. This restriction of movement is further enhanced by electric barriers whose deactivating switches you must search out. If you are unfortunate enough to encounter some of the other inhabitants tread with caution, they are exceedingly nasty. Becoming lost is not possible thanks to the map function which – when called – displays the appropriate sections of the complex and the relative positions of your droids.



Because the instruction is brief, not everything is fully explained. Two of the movement commands seem interesting enough but their practicality remains in question. The first, putting your droid on automatic, causes it to wander of its own volition. This wandering is usually short-lived before the "search completed" message appears and control is returned to manual. What the object of the search is I have as yet to ascertain. The second movement command is easy to understand but its relevancy remains doubtful. It is possible to program a number of steps into your droid which can be run as a program.



A little more variety and this game could have been a winner; instead it offers a few hours of mindless maze-plodding.

Adrian Pumphrey

ROUND-UP			
NAME	Mission Omega		
SUPPLIER	Bug Byte	PRICE	£2.99
73%	39%	47%	60%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

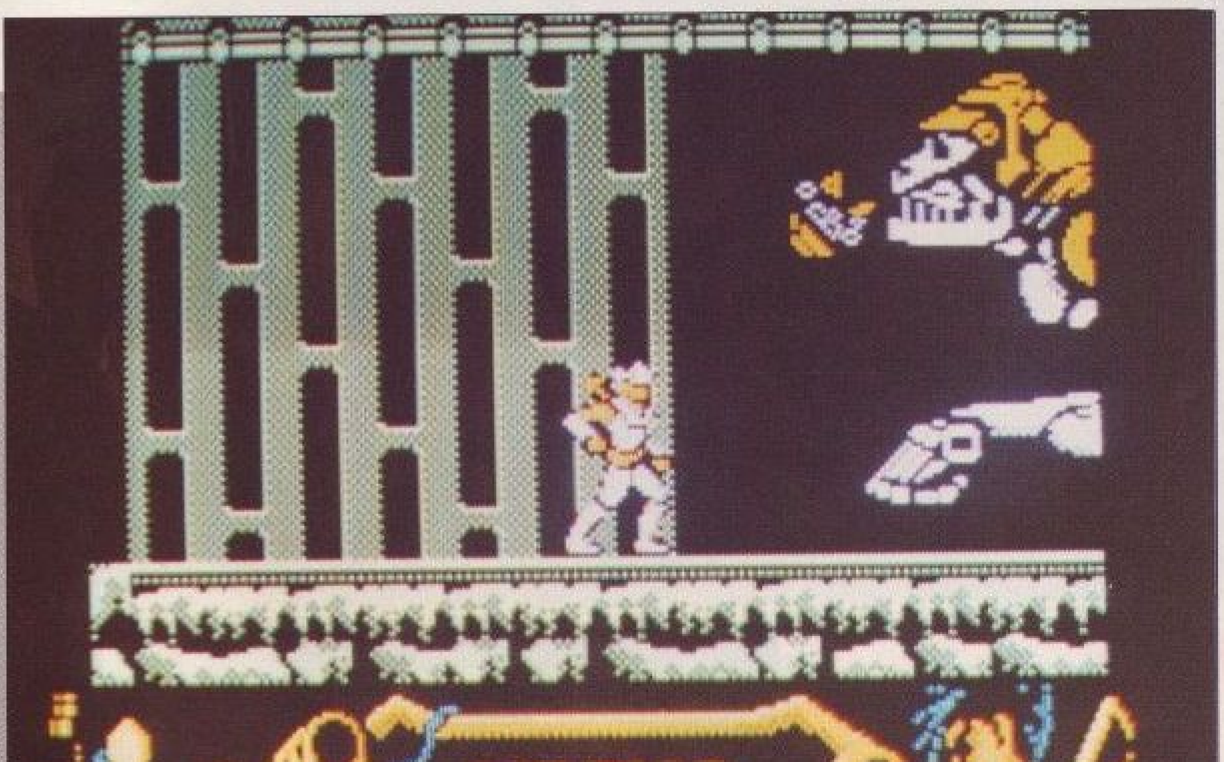
Strider

A super-agile CIA agent storms Russia in search of secrets.

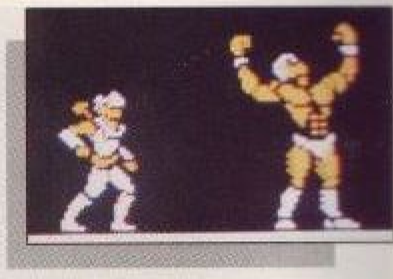
Step boldly into the world of espionage (no apologies for the pun), where a lone, highly talented hero storms the snow-capped peaks of Siberia in a quest for secrets to take home to the CIA.

Strider is an unusual fellow. He uses no projectile weaponry, just a sword which he wields with lightning fast reflexes and an acrobatic ability second to one. In fact Strider is the perfect ninja, using basic weaponry against the genetic engineering and hi-tech of the Russian army.

Strider departs from the usual form of platform game, the platforms quite often becoming walls, ceilings and so on. To a normal character these sheer surfaces would be an unsurmountable barrier but, with his unique talents, Strider can climb vertical walls, hang on the underside of platforms and negotiate the steepest slope with ease. When Strider encounters a villain (although technically speaking Strider is the villain of the piece), a quick swipe of the sword makes all well in the world once more. When Strider attacks with his sword you see a blur of movement, as if someone had swirled a cloak, and all within the swirl feel the deadly blow. Occasionally he will encounter canisters which contain bonuses; apart from standard options like more life-energy and temporary invulnerability, he can pick up a droid consort, which orbits his person forming a limited shield.



The first level starts with a low aircraft pass which drops Strider into the heart of Red Square. From here Strider must battle his way past many heavily armed troopers and some rather weird organic monsters, the first of which are the pygmy elephants. These creatures lurk near slopes and take pot shots at our hero as he climbs. The second organic monstrosity encountered on the first level is the end-level monster and what a monster it is. A giant caterpillar dwells in the U-shaped council chamber. On its own it would be quite harmless but it has picked up the nasty habit of charging around the room waving a sickle. Strider's acrobatic abilities come into play at this point in the game because he can bounce around the U-shaped chamber and still pause occasionally to take a swipe at the caterpillar guardian.

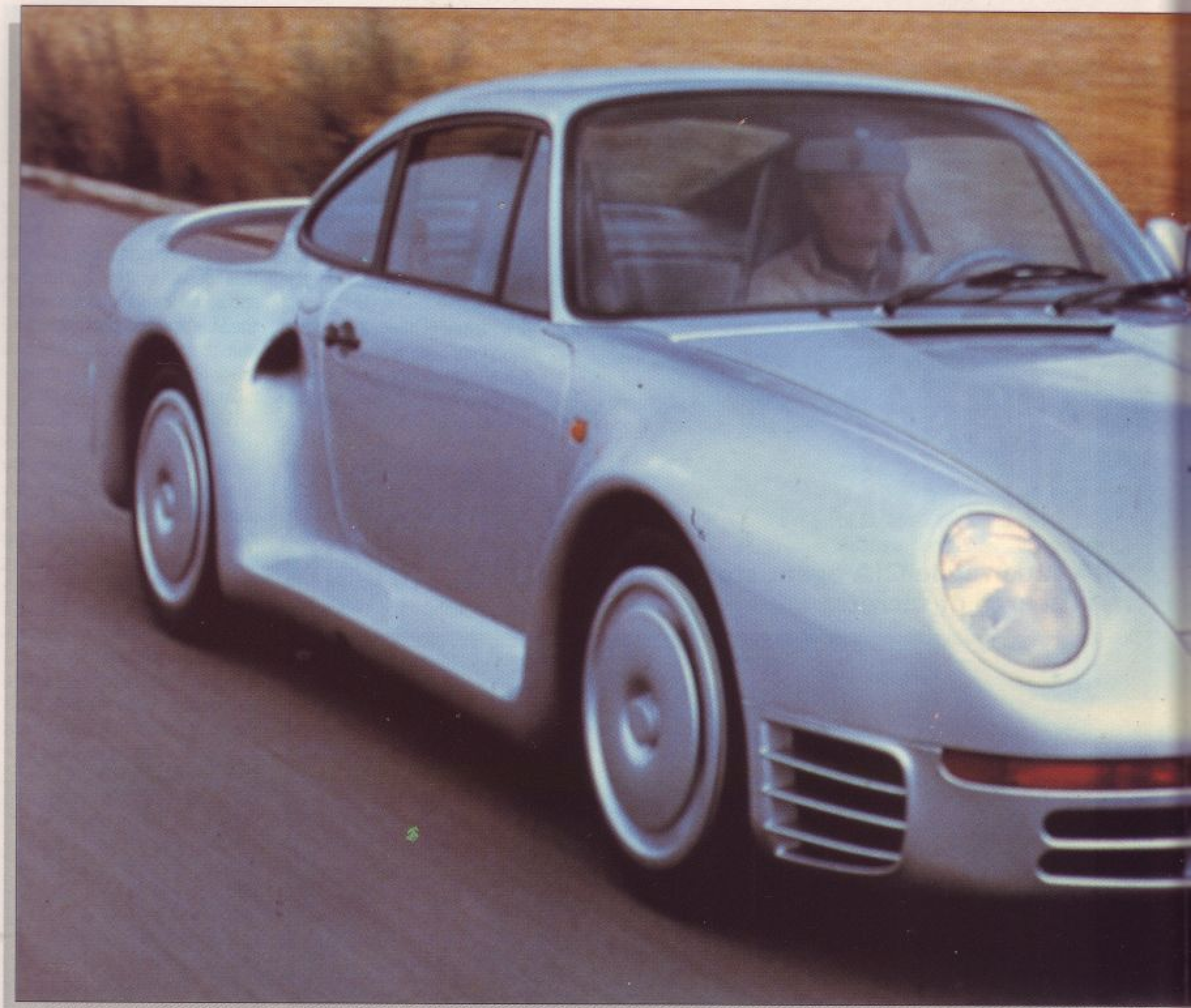


As you progress through the game you see some sights that most assuredly do not belong in present-day Russia. The wasteland with its dogs and parachuting bombs I can fit into my reality map but the ninja ballerinas and the boomerang-throwing Amazons take more than a little believing. It takes a certain amount of faith to play this game as more often than not you are faced with the choice of whether to *jump* into the void – hoping that there will be a platform on which to land – or whether just to *drop* off the edge. With a little experimentation and a few lost lives you soon work out when to jump and when to drop.

Never in my gaming experience have I ever come across a character so agile, and controlling him is a delight. The foes vary enormously and a surprise awaits you on every platform. This is one game that I can wholeheartedly recommend to the discerning player.

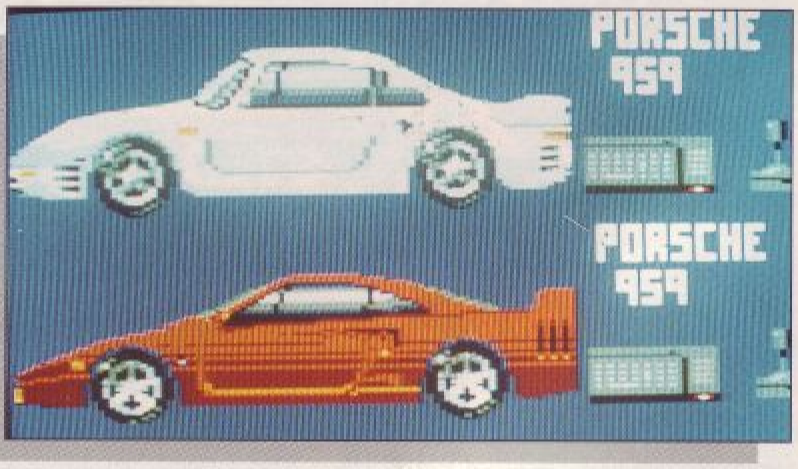
Adrian Pumphrey

ROUND-UP			
NAME	Strider		
SUPPLIER	U.S. Gold	PRICE	£9.99
85%	74%	92%	89%
GRAFFIX	SONIX	PLAYABILITY	OVERALL



Test Drive 2 - The Duel

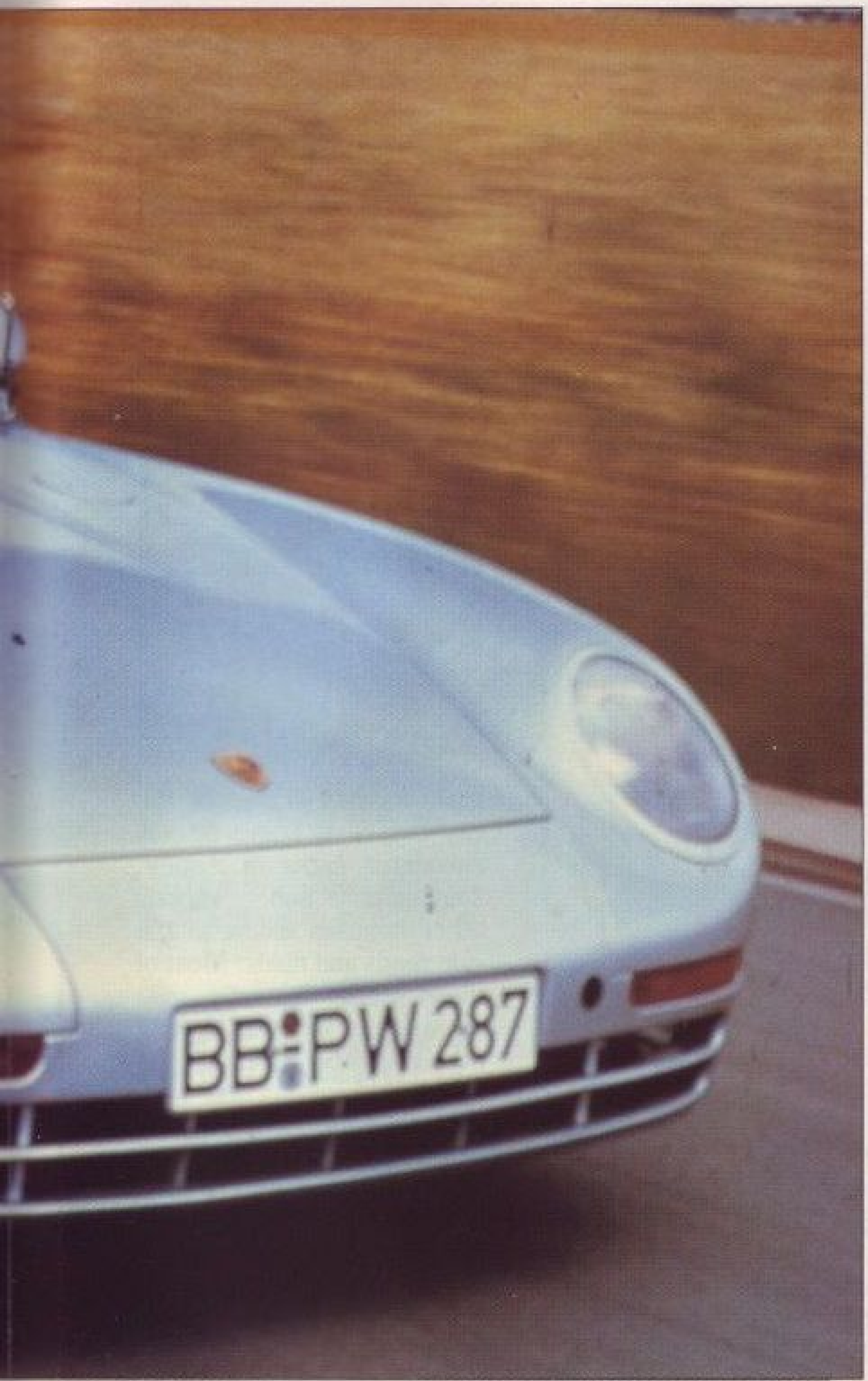
Two kings of the road go head to head over some of the world's deadliest terrain. We preview the next blockbuster from Mastertronic.



It's mayhem on the streets as the big boys go for it. Ferrari and Porsche are locked in a head-to-head duel across burning desert highways and treacherous mountain tracks. Only the brave and the foolish enter, most do not survive; but those that do can hold their heads up high as they queue up to pay their speeding fines.

At the start of the game you get to choose between the Ferrari F40 and the Porsche 959 before selecting your method of control. Each car has its own authentic dashboard display. If you are playing in 'one player' mode then you must decide whether to race against the other car or the timer. Once the options have been selected it's dodge the cacti time as you race off across the deserts of America on heat tortured roads.

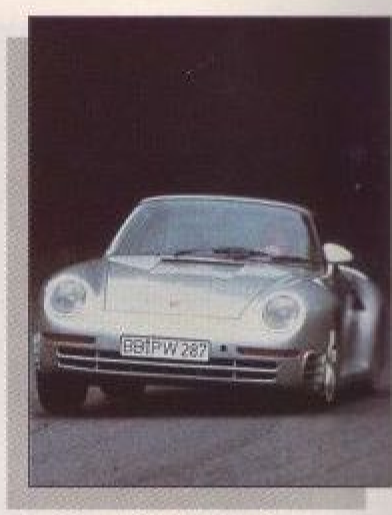
Unlike normal racing games you have to contend with traffic coming in the opposite direction. It is all right to cut the odd corner but if someone is coming the other way you either per-



form some remarkable evasion manoeuvres or you crash head-on losing one of your lives. Once you have lost all five lives then the game is over but each time you refuel you get an extra one. On the first four of the difficulty levels the gear change is automatic but when the going gets tough on manual transmission watch those revs or the engine will blow taking with it your chance of victory.

As you weave across the landscape a sure way of telling where your non-moving steering wheel is pointing is to look at the dot. This dot moves around the wheel as you steer to indicate the top of the wheel. Inside the steering wheel are two indicators, one for the revs and the all-important speedometer. Across the top of the screen a number of illuminated pixels can be seen, these aren't a bug, they are the relative positions of your car, the opponent and any police cars giving chase. Your built in radar detector should alert you to the presence of any speed traps you pass through. Further information on your surroundings can be gained by looking in the rear view mirror. The mirror constantly displays the road behind you and any vehicles that may be there.

At the end of the desert road you will encounter a gas station. Stopping here is essential if you wish to continue. To fill up simply stop between the two white lines. At the end of each level you will find a gas station.



Next come the winding mountain roads. On one side you have the cliff face and on the other you have a short trip to oblivion. The twists and turns on this track make it deadly and the only time you need not worry about dropping off the edge is when you are in a tunnel and the final straight where it is a mad dash for gas and victory.



The third level you find yourself on the grassy plains where further challenges await.

At the end of each level you receive a breakdown of your performance. This shows your average speed and time taken, it also shows your opponent's average speed and time taken.

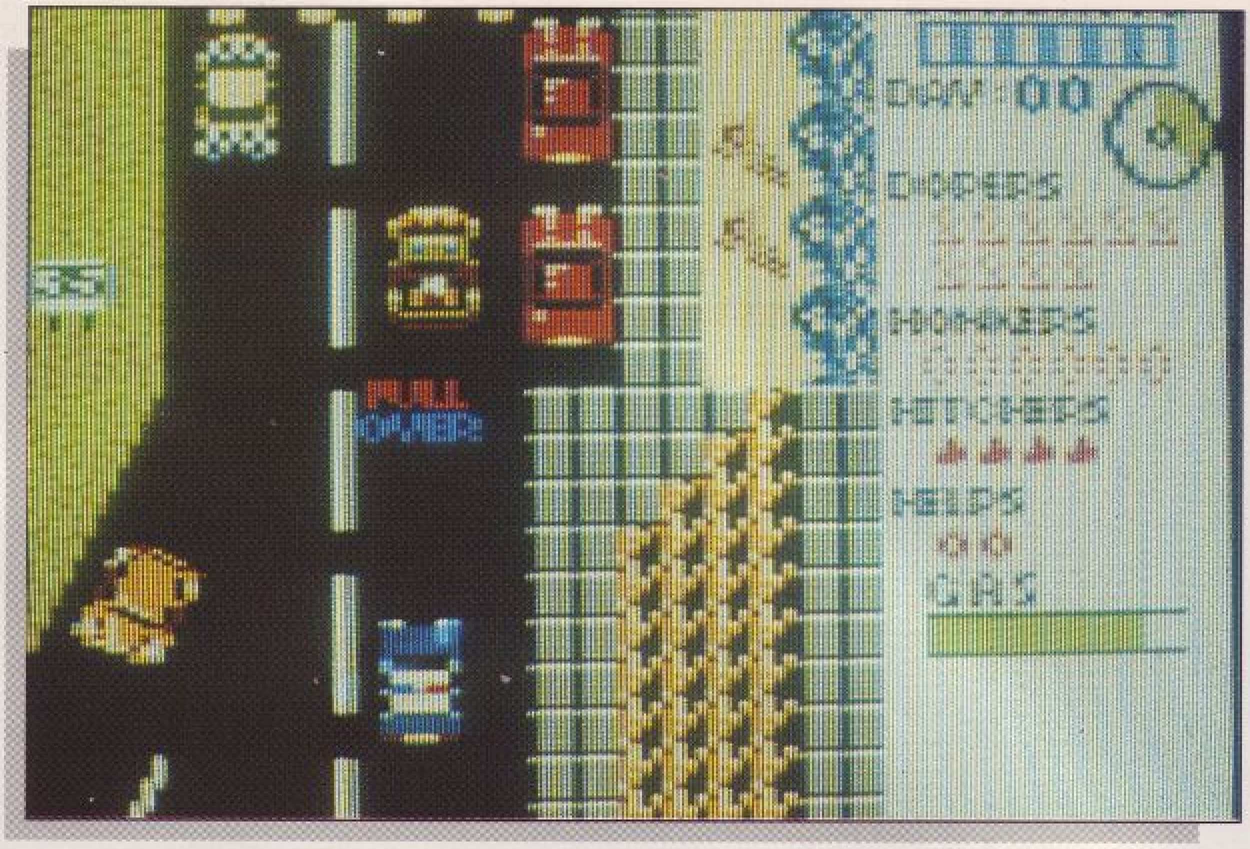
With twelve levels of difficulty there is little chance of you beating this game first time around. The game is the racing challenge of the millennium without the need to spend your next six year's wages buying the cars or three years in jug for non-payment of speeding fines.

No scenery discs are planned for the CPC version of the game. If the screenshots look a little odd fear not, this is an early preproduction version and as yet there is a lot of touching up to do.

Adrian Pumphrey

ROUND-UP			
NAME	Test Drive 2 – The Duel		
SUPPLIER	Mastertronic	PRICE	£9.99
Watch	This	Space	No score pending release
GRAFFIX	SONIX	PLAYABILITY	OVERALL

Officer Bob is the law. He is mean, tough and hard. Well, he is for someone who eats twenty doughnuts a day followed by ten cups of coffee, each containing three spoons of sugar, and who spends the entire day on his bum. But what he lacks in physical ability he makes up for in enthusiasm, which is kept at a constant peak by his short-tempered boss.



The week starts with a little refresher course in how to arrest cones. This section of the game is optional but advisory; it allows you to familiarise yourself with the controls of the car and the use of the arrest-ng siren. The controls hemselves could not be impler as they mirror the novements of the joystick. 'his need only be used to orrect or alter the movenents of the squad car, as therwise a constant speed nd direction is maintained. n front of your vehicle there s a representation of a steering wheel; the faster you travel the further in front of your car the wheel appears. When holding the fire button this steering wheel becomes the arresting siren which, when placed on a subdued crook, arrests them.

APB

Officer Bob is mean, tough and hard and kept on his toes by his highly short-tempered boss.

Having mastered the basics with the cones in the car park it is time to hit the streets. A birds-eye view of the city charts Bob's progress as he attempts to negotiate the finer points of one-way streets. Unfortunate incidents like running over pedestrians and head-on collisions with trucks earn demerits. Enough of these and you are out. Sometimes it is worth losing your job, just to be able to witness the dressing-down Bob receives from his boss. These animated scenes range from one where mad Bob the pedestrian killer is thrown into the loony van to one where he receives a quick toasting from the boss's fiery breath.

Out on the street Bob must pull in his quota of miscreants and hard-core crooks. Some crooks can be captured simply by running them off the road with your squad car, but the other slightly meaner baddies require a slight sprinkling of lead. As Bob traverses the city (which is huge) he will encounter sacks of money, doughnuts and various other bonuses hiding in the side roads and fields. Most of these items instantly give extra time but the doughnuts must be taken to the doughnut shop and exchanged for it. The money which Bob either earns or finds can be used to beef up his squad car. With any luck, this will give him the well needed edge which wil compensate for his natura ineptitude.

This game is not to b taken seriously. It is strictl fun. The game is easy to ge into and the captain's antics are guaranteed to delight. Why bother taking a walk on the humorous side of life when you can drive there with the sirens screaming?

Adrian Pumphrey



ROUND-UP			
NAME	APB		
SUPPLIER	Domark	PRICE	£9.99
86%	70%	90%	87%
GRAFFIX	SONIX	PLAYABILITY	OVERALL



Dragon Spirit

A big blue dragon sprints through the wilderness spraying searing spittle.

Beyond the frozen wastes, beyond the end of time, beyond your wildest imagination, is *Dragon Spirit*, the fly-and-die spectacular that takes the CPC not only beyond current programming ability, but beyond life, death and the universe as we know it.

You might think, from this description, that I liked this game. It is true, I did. Dragon Spirit is Domark's conversion of the coin-op of the same name, and involves a big blue dragon sprinting through the wilderness, spraying all and sundry with searing spittle. No, he does not quite manage to breathe fire, it is more like bits of blob.

There is a reason why you, as the dragon, need to go racing along, cutting your swathe of destruction, but it is always the *same* reason, and you could probably make up something more appropriate yourself: Gorby the dragon cutting through Soviet inefficiency, torching corruption and party dogma, is just as likely. Not only do you spit, you also drop bombs onto the ground. Quite what these bombs are or where the dragon gets them from I will leave to your furtive imaginations. If you are playing with a joystick this presents something of a problem because you need to press the control key on the keyboard in order to bomb, and bomb you must. Not easy to manoeuvre, shoot and bomb with the keyboard all at the same time.



Dragons do it vertically, or so I have been told: scroll that is. With a sizeable strip on the right being occupied by the control panel, most of which is taken up by a completely superfluous picture, there is not much room in the playing area for manoeuvre. The scrolling is *not* quick, and for that I am thankful because you would never have time to bomb things otherwise. The biggest plus about the game is the graphics; they are great. Everything is multi-colour, and parts of the landscape are animated. Lava flows from volcanoes, spiders wriggle in webs, little bogey men pop up out of holes – and pop back again – and a phoenix flutters out of volcanoes. With many of the opposition running along the ground, bombing is essential, especially as half the bonuses and power-ups are down there. Just bomb that egg and see double or triple-headed icons; faster fire; auto fire; wing shields; extra lives; bigger spittle and other goodies float briefly around. You will need those heads and all that extra firepower, and speed, to counter the incoming flak, and then when you meet the end-of-level monsters, which are particularly large and unpleasant. The triffid had us confused for a while, until we realised that you had to bomb its roots. Then we were away.

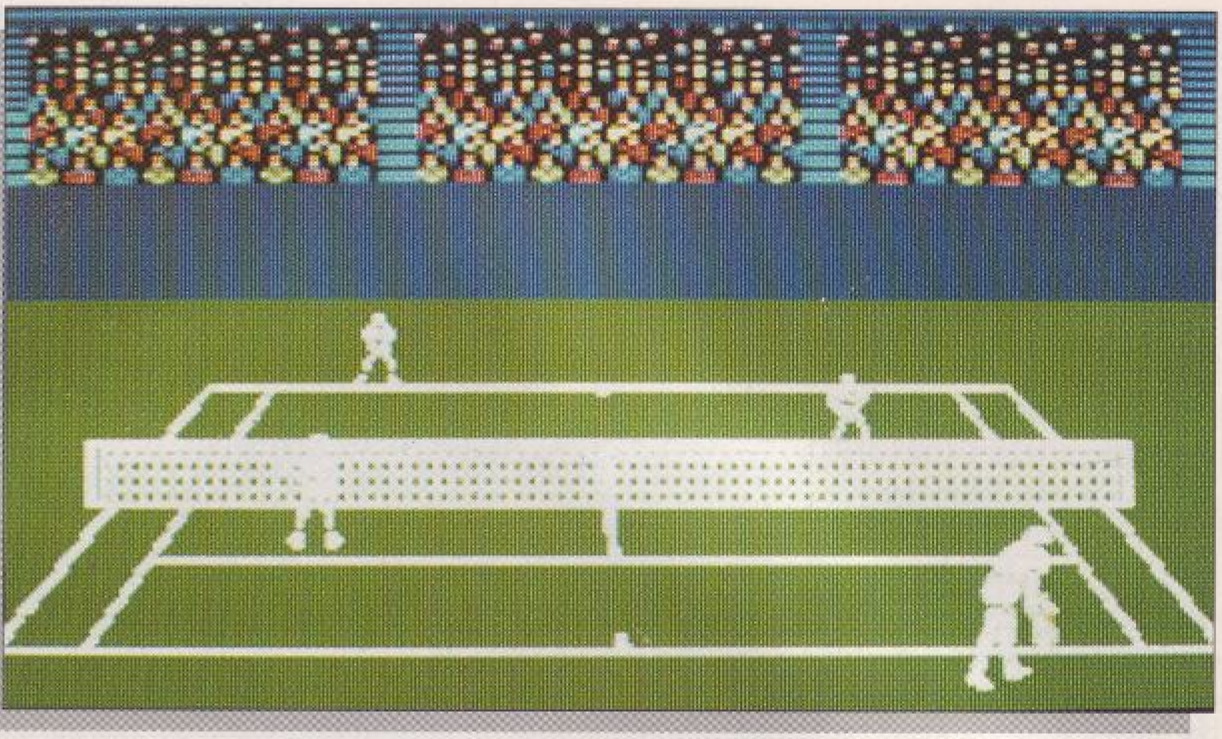
After the similar but completely awful *1942* it is reassuring to discover that software houses can produce excellent scrolling shoot 'em ups. Dragon Spirit is just that. It is a pity that you have to bomb sea lions on level six though.

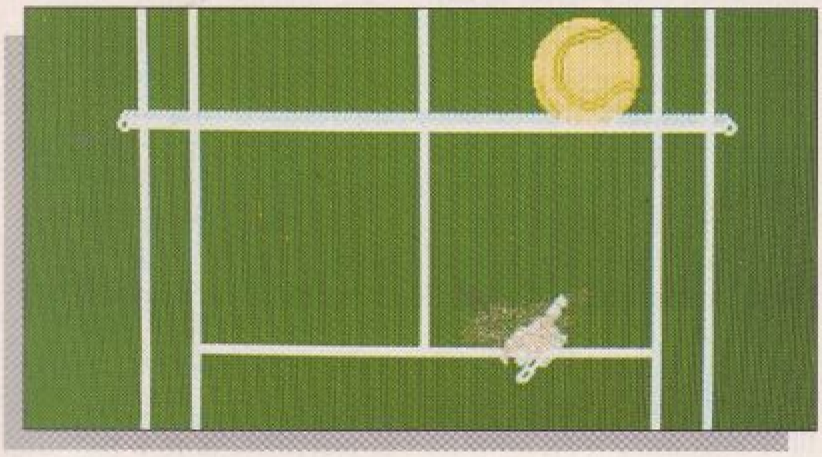
Mark Luckham

ROUND-UP			
NAME	Dragon Spirit		
SUPPLIER	Domark	PRICE	£9.99
92%	61 %	84%	88%
GRAFFIX	SONIX	PLAYABILITY	OVERALL

Passing Shot

Summer may be over, but the fun goes on with this tennis simulation.





"Tension. Where was it coming from? The stomach? The heart? Hell? The dewy grass glistened in the morning sun while I sat, racket in hand, waiting for the call to join the world on the centre court. The thick, ripe stench of week-old strawberries played dancing games with my concentration and the thought of days gone by, the tears and torment that tournaments bring. Fifty-five bottles of barley-water later, the rantings of Dan Maskell still echo through the halls of the clubhouse, and here I am, ready, tense, tuned like a radio and waiting for the final."

That was an extract from Joss McStick's *Travels Through A Suburban Hardcourt*, which, many critics believe emphasises the untapped drive of British youth towards distant goals of international glory that elude our beleagured tennis pros. *Passing Shot* from Sega promises to provide the lost youth of today with a chance to live out such aspirations on the tennis world. Originally a coin-op game, *Passing Shot* is now available for the home computer market and is destined to earn some significant interest.

The documentation for the game claims that *Passing Shot* "allows you to participate in championship tennis at world-class standard, visiting locations all over the globe." To a certain extent this is true, but it is important to take into account the limitations of home computers. Players can indeed take to the road and travel the world, playing on grass and clay courts depending on the location. To begin with, level 1 will enter you in the final of the French Open against a character with initials suspiciously reminiscent of the name Yannick Noah or Young Ned.

With your heart still bleating like that of a stranded sheep, it is time to master your strokes and serve for the opening game. The view of the court is represented at this stage at spectator level but it then switches to an overhead view for rallies. An initial encounter with a rally can be a little daunting and confusing because of both a lack of ball judgement and an understanding of ground-shot controls. There are four possible shots – flat, slice, topspin and lob – which are controlled by moving a joystick in the desired direction and pressing the fire button. With a little practice this soon becomes second nature.

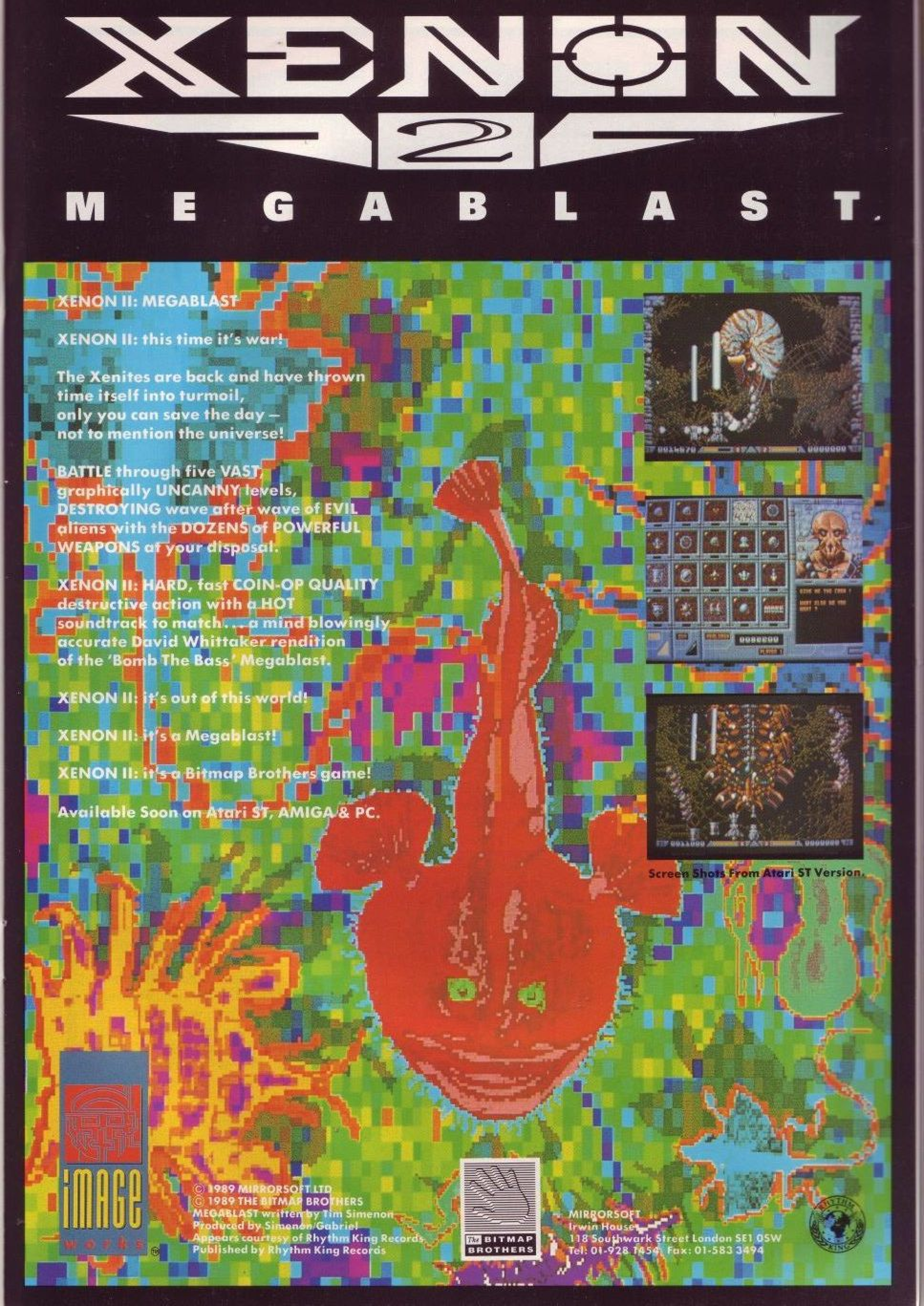
The game incorporates the usual elements of tennis, including double faults, aces, body touches and the scoring system. You are, in fact, required to reach six games to win a match, then you will be whisked off to another round in another location. With three tournaments under your belt – French, Australian and American – you will eventually reach the culmination of your tennis career, at the English rose of Wimbledon. The nerves begin to fray once you have trodden the hallowed turf of the home of tennis with only three games separating you from the title. It may be time to regret all the strawberries and cream!

If you cannot cope with the individualistic slant of singles, perhaps a shot at doubles would suit you better, if of course, you have any friends at hand. The doubles game can be more fun, although with only one joystick, keyboard controls can be a little difficult for one of the five players. All things considered, the game is fun and easy to play, although interest may wain after a few plays as the desire for more speed grows. Nevertheless, *Passing Shot* will provide considerable entertainment for the dreamer with aspirations but little practical talent, whatever the weather.

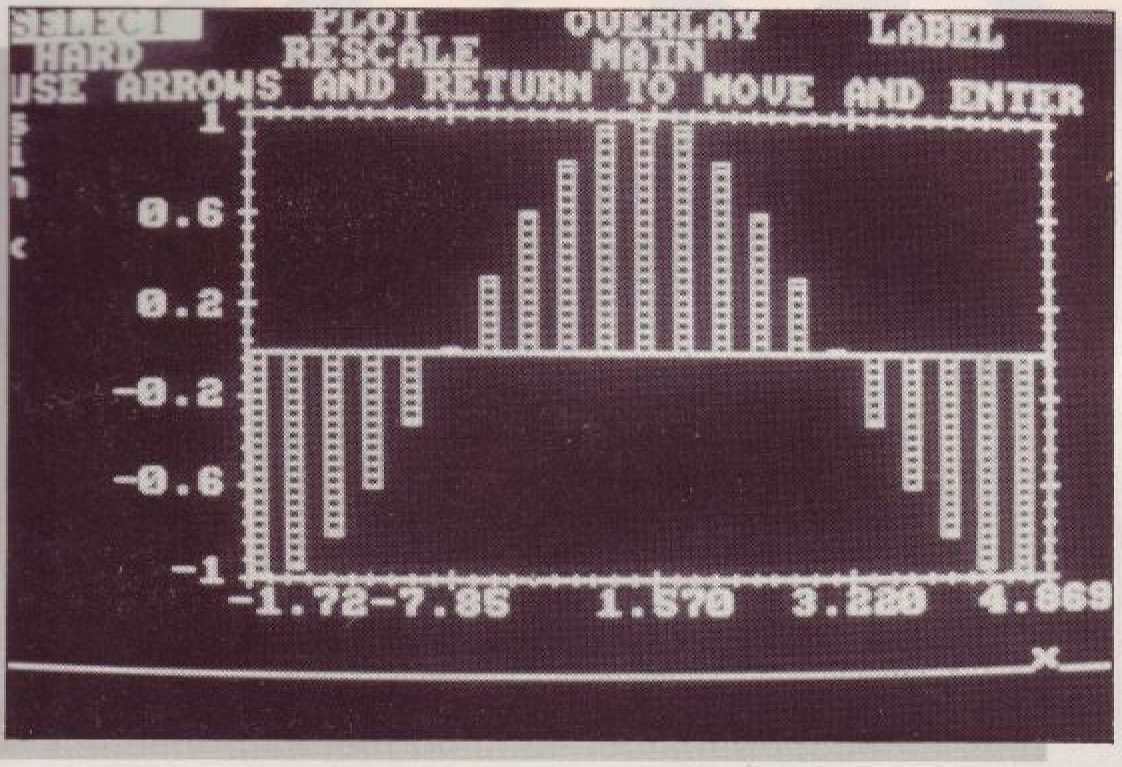
Basil Bread

ROUND-UP

NAME	Passing Shot		
SUPPLIER	Image Works	PRICE	£9.99
60%	55%	83%	66%
GRAFFIX	SONIX	PLAYABILITY	OVERALL



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XENON II: it's a Megablast!
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Produced by Simenon/Gabriel
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Published by Rhythm King Records
The BITMAP BROTHERS
MIRRORSOFT
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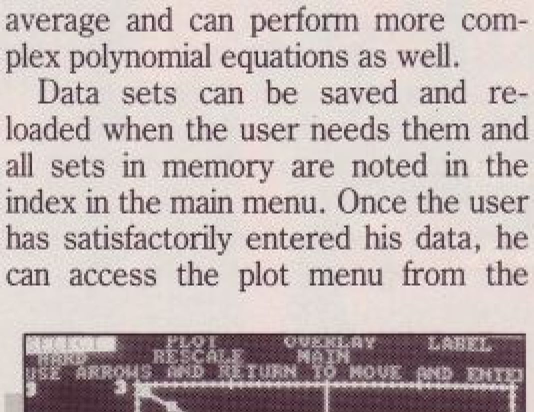
A great plot

Yvonne Taylor reviews a new menu-driven plotting package, from TMC.

Arnold Plot is a menu-driven plotting package for Amstrad CPC users at home, school or in business. Everything the user needs to know about is accessed via the main menu. Most of the menu is taken up with the creation and manipulation of the all-important data sets. The user may input a maximum of 15 data sets with a maximum of 50 values per set to give an overall maximum of 750 values in the Arnold Plot database. These data sets can contain any sort of information the user chooses; details of school science projects or business sales charts are equally applicable.

Data is entered into the program via the Data Editor. By accessing the Edit Data Set option new data sets may be created. The edit screen displays a command line along the top, the rest of the screen being divided vertically down the middle. On the left of the dividing line is the chosen name of the data set and the input cursor: up to 15 values may be entered here. The sixteenth and further values are entered on the right-hand side of the dividing line. Corrections such as insertions or deletions can be made easily, so the user will not find it difficult to manipulate the data. The Data Editor also features more sophisticated options such as the ability to apply an expression such as X + 10 to given values; it will work out calculations such as the average and can perform more complex polynomial equations as well.

Data sets can be saved and reloaded when the user needs them and all sets in memory are noted in the index in the main menu. Once the user has satisfactorily entered his data, he can access the plot menu from the



main menu. The plot screen is divided into three parts. At the top is the command line and space for user instructions. There is a large area to display graphs and at the bottom of the screen there is a separate section in which to display information and error messages. Data sets can be plotted as graphs, bar charts, histograms, high–low charts and pie charts. Further options are for lines, symbols, or lines and symbols graphs, and there are three types of bar charts and histograms: centre, left and right. When first accessing the plot menu, the user must choose which type of display he needs; then he must make these further choices before he can start specifying which data set goes on which axis. After that, everything is plain sailing.

The plot menu allows overlaying of graphs or bar charts on graphs, but the other plot types may only be overlaid by similar plots. There may be no more than fifteen overlays, only three in the case of pie charts. This is as much because of the need to avoid overcrowding as it is because the program capacity is being filled up. Plots can also be re-scaled and labelled up to fifteen times with whatever notes the user chooses.

When all necessary adjustments have been made, the final product may be printed out. Users do not need to have an expensive plotter to get good results from this program. A hard copy of the plot can be obtained by a screen dump to dot matrix printer or by the use of a pen-plotter such as the *MCP 40*.

Throughout the program, instructions are delivered on-screen and the manual is very easy to read, if a little cramped. Error messages or user mistakes are accompanied by low-tone beeps from the machine. These beeps should be treated as warnings unless otherwise specified in the manual.

Users will also notice that the program is capable of being set for colour or green-tube monitor (default colour). Here is another example of how the program caters for a wide range of users; with a standard hardware set, good-looking results can be produced for whatever purpose. Users needing more professional-looking hard copy have only to use the right machinery. This program can cope with both worlds. As long as the user knows what he wants to do, there should be no problems. The manual is readable and instructive with plenty of examples for the user to follow. There is example data supplied on the disc. Arnold Plot is a flexible, affordable program which can give CPC users capabilities so far monopolised by owners of more complex machines.

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Supplier: The Micro Computer Ltd
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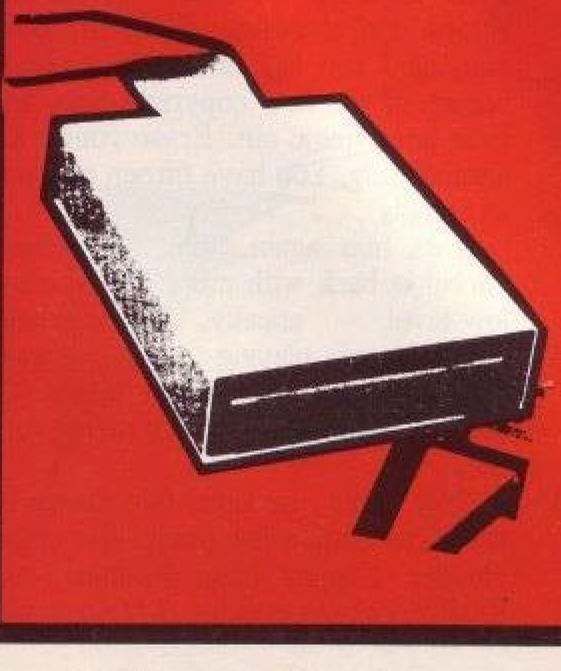
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The hack is back in town

The man with the pentangle, Triumph Bonneville and complete Led Zeppelin back catalogue brings you the freshest pokes in CPC city.



Okay hackfans, plug in your monitors, dust off your keyboards, and pop in a new tape; we are hacking again. Yeah, I guess you can put the kettle on too, if you want.

Alan Dougherty from Belfast is one of the many who have cracked the anagrams in level one of *Vindicator*, and is also one of the few who has actually bothered to send in the answers! Before you read them, let it be known that he wants some help with *Captain Blood*, as he is getting nowhere fast with the *Migrax*. Here is the stuff you are after:

HUGE PHALUS – PAUL HUGHES
LEON WUPAS – PAUL OWENS
RON H VAIN – IVAN HORN
MALEK MIB – MIKE LAMB
DR ANTONI CLAM MD – MARTIN MCDONALD
NATHAN JUNNOD – JONATHAN DUNN
BEN STIMULOR – SIMON BUTLER
SEAN JIM HAGGIS – JAMES HIGGINS
SAM N JOKER – MARK JONES
JOE HANGMEN – JOHN MEEGAN

Thanks for the solutions, Alan, but I am afraid that the only printable anagram I can make from your name is ANALED YOGHURT, which is not very good. Mind you, the first editor of *ACU* was an anagram of IRKSOM CONMAN. Append suggestions for one for the current editor to all those wonderful pokes and cheats you send in. A bonus prize to anyone who can make an anagram out of VAX!

R. Cannon of Hedgerly has come down with a bang. He has discovered that a Multiface 2+ backed up copy of Robocop will not run. It puts *SERVE THE PUBLIC TRUST* up on the screen and crunches. Well, Mr Cannon, all I can say is that you are in breach of the new copyright laws and have been found out. Erase your copy immediately. You have fifteen seconds to comply . . .

It is him again. John "Hackman" Girvin is back with more high-quality, low-level, sneaky, underhand methods of playing games always without fear of coming a cropper. Or at least until the electricity meter runs out.

Only ('only', he says) two games on the victimization list today: the cheap *Hopper Copper* from Firebird, and Realtime's golden oldie, *3-D Starstrike*

from the *Computer Hits 2* compilation.

The wee Hopper Copper hackette will get you or anybody else infinite lives (infinite lies?). Type it in, save it, and run it with your Hopper Copper tape rewound and poked in the drive. Magical things happen to the colours on the title screen, and the energy display looks more than a little drunk, but do not worry about it, man.

```
1 'Hopper Copper Hack
2 'By John Girvin
3 'August 1988
4 '
10 MODE 0:OPENOUT "D"
20 MEMORY $15FF:CLOSEOUT
30 LOAD "!",&1600
40 LOAD "!",&C000
50 LOAD "!",&2000
60 POKE &7D19,0:POKE &8054,&A7
70 POKE &7D14,0:POKE &7EOC,5
80 CALL &6069
```

Now for the 3-D Starstruck thing. This is a game to which I keep coming back whenever I feel like a mindless blast (that is most of the weekend). It works much like the Hopper Copper pokette, but you are given lasers that are so cool they wear mirrored shades, and you also get infinite shields. If you are a really boring cosmic wimp, you can stick to level one, thus avoiding the barriers in the trench which appear in higher levels. You had better appreciate this, okay? Fast forward over the file "STAR", and RUN the pokette:

```
1 '3D Starstrike Hacks
2 'By John Girvin
3 'August 1989
4 '
10 OPENOUT "D":MEMORY
 &13FF:CLOSEOUT
20 MODE 0:BORDER 0:RESTORE
30 FOR P+0 to 15:READ C:INK
 P,C:NEXT P
40 LOAD "!SETUP,BIN":CALL &8EA
50 LOAD "!CODE,BIN"
60 POKE &2665,0:POKE
 &9FD6,&A7:'Stay on one level
70 POKE &380E,0:'Cool lasers and
 infinite shields
80 CALL &279C
90 DATA 0,2,6,18,20,24,26,26,26,
 26,26,26,26,26,15
```

You are given lasers that are so cool they wear mirrored shades.

Well done, John. Packet of goodies on their way to you, bribery and corruption as per usual. Oh yes folks, should you send in any pokes, please let me know whether the poke is for tape or disc (John's were both tape), and what kind of machine you have, in case I am feeling generous.

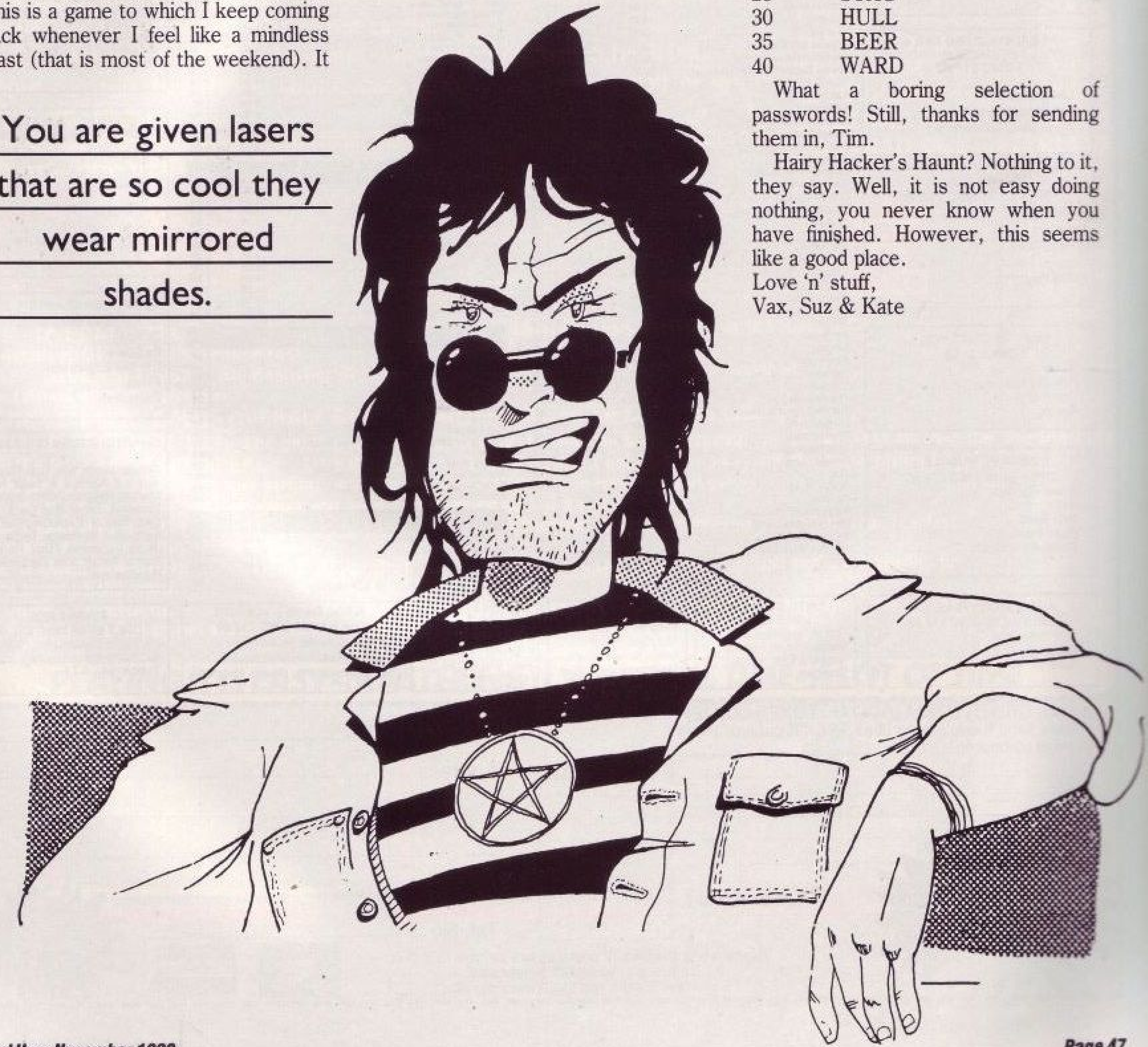
Tim Lowell sent some stuff in, not to me, but to the 10-liner department. Still, he has passwords for Codemaster's *Ninja Massacre* and here they are:

Level	Password
5	RAIN
10	YEAR
15	ROCK
20	PINK
25	STAG
30	HULL
35	BEER
40	WARD

What a boring selection of passwords! Still, thanks for sending them in, Tim.

Hairy Hacker's Haunt? Nothing to it, they say. Well, it is not easy doing nothing, you never know when you have finished. However, this seems like a good place.

Love 'n' stuff,
Vax, Suz & Kate



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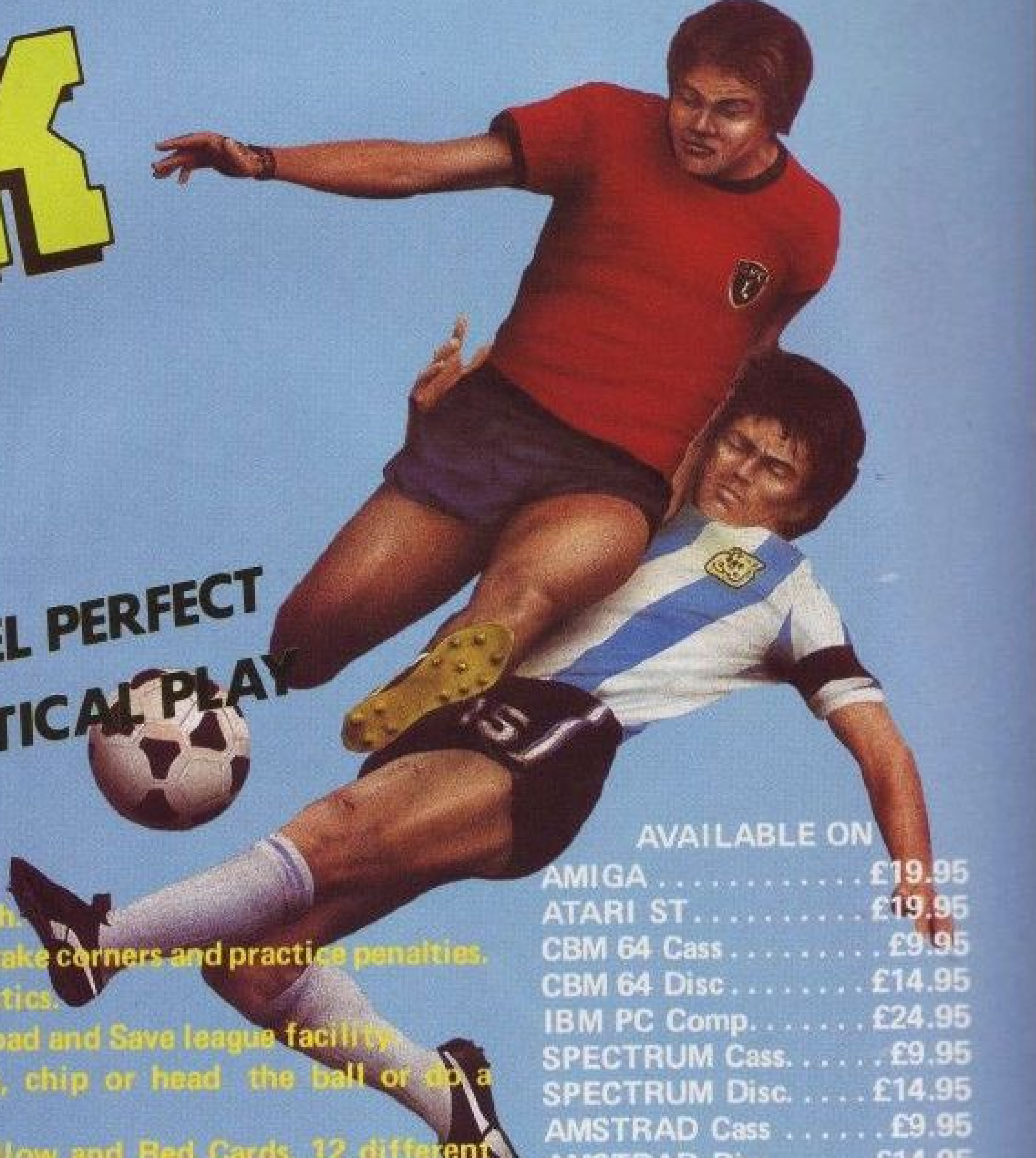
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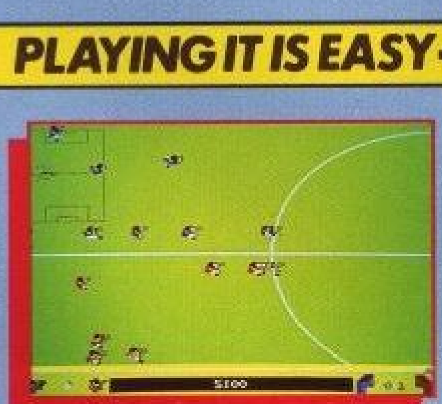
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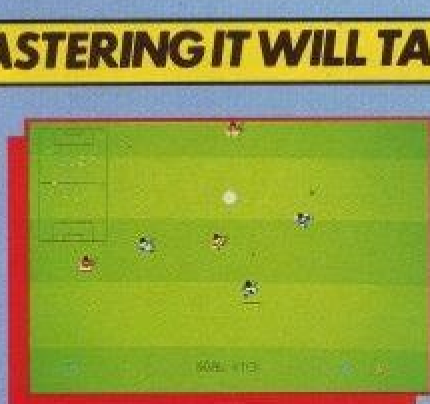
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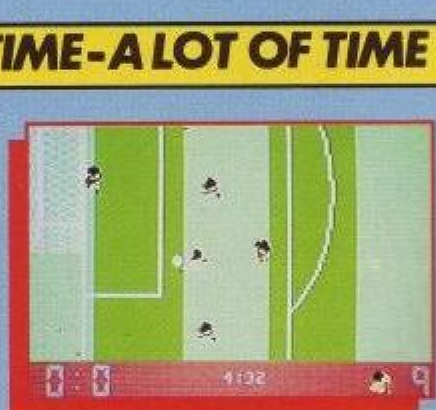
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Emergency – invasion imminent

This month your favourite aunt brings you the second part of Auntie John and the invaders from outer space – so get blasting.

Greetings! If you missed last month's exciting machine-code extravaganza, then I'm afraid that what follows will be almost totally irrelevant. The assembler source code that follows is the second and final instalment of our DIY (Destroy it Yourself) Space Invaders game. If you don't have last month's ACU then rush out to that newsagent around the corner who always has lots of back issues and buy it immediately. If your newsagent is anything like mine, it is staffed by two old ladies who still refer to money as 'new pence' and who think a computer is someone who gets the train to work every morning. Technology seems to have passed by this particular part of the world. For goodness sake, you can even buy a copy of 'Your ZX81'!

Alternatively, have a word with the Back Issue Department; she has nothing better to do while she watches *Neighbours* during the lunchbreak.

The assembler listing that is taking up all that space over there is the second half of our Space Invaders program. If you are typing it all in, please bear in mind that it must be added immediately after the first section of code: It cannot be assembled separately, because the labels cross-reference between the listings. Load up the code you spent all last month entering and type in all this stuff directly after it. What fun! If you don't think that there will be enough space in your computer's memory to hold all the source listings as well as the assembled code, check out your assembler instructions for written object code to disc or tape. With the MAXAM assembler, the directive in question is 'WRITE <filename>'.

This month's assembler is the code needed to control the Invaders, move the bombs, and provide the various sub-routines needed, such as printing text and creating random numbers. (The random number sub-routine is a very useful one which you may want to steal, copy, borrow, rip-off and use it in your own programs). All the game

```
; --------------------------   INVADERS   ---------------------------
; - - - - - - - - - - - - -    Part Two    - - - - - - - - - - - - -

INVADERS                                                  ;Control the Aliens.
        push iy:pop ix:call PRINT_INVADERS                ;Business with IY/IX
        call MOVE_INVADERS                                ;is to animate aliens
        call CONTROL_BOMB                                 ;see text.
        ret

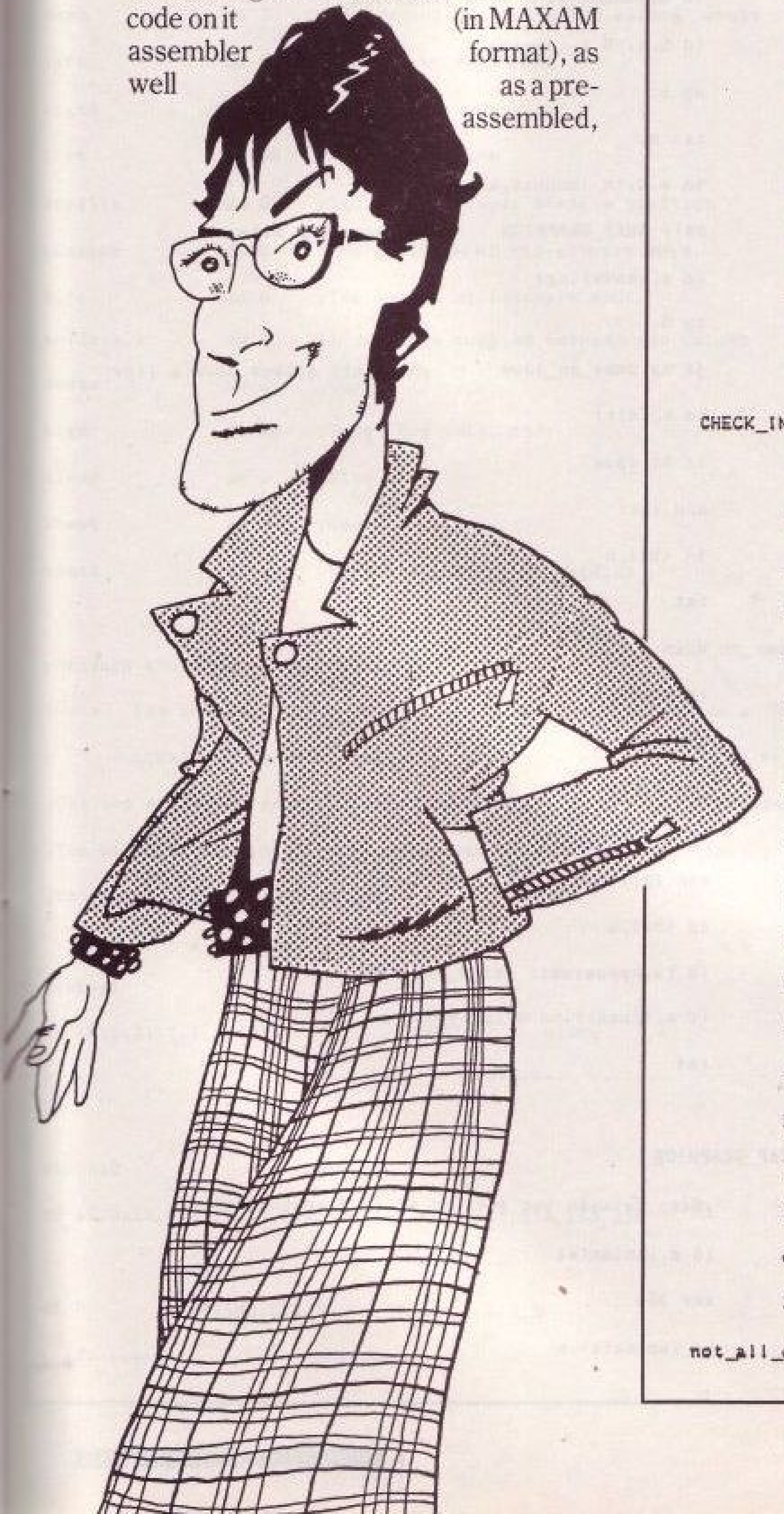

PRINT_INVADERS
        ld a,0:ld (moveflag),a
        ld b,4                                            ;There are 4 rows.
        ld de,invadersdata                                ;DE -> life/death array.
        ld a,(ypos)                                       ;Aliens' height
        ld h,a
lpb     push bc
        ld b,7                                            ;There are 7 coloumns.
        ld a,(xpos)                                       ;How far across the
        ld l,a                                            ;screen they are.
lpc     push bc
        ld a,(de):cp 0:jr z,delay      ;If this invader is dead then slow down.
        push de:push hl
        call PRINT_ALIEN                                        ;Print a single Alien
        pop hl:pop de:push de:push hl
        call CHECK_INVADER                                ;Is it being shot?
        pop hl:pop de
          ld (de),a
  dead    inc de
          ld a,6:add l:ld l,a
          pop bc
          djnz lpc
          ld a,3:add h:ld h,a
          pop bc
          djnz lpb                                        ;Continue until all
          ret                                             ;Aliens looked at.

  delay   ld b,70                                         ;This delay is to
  lp3     djnz lp3                                        ;reduce the speed of the
```

variables are given their definitions in this section and, worst of all, the graphics data is defined. Graphics data is the bane of every programmer's life: it takes forever to define it all. I created it all with the Advanced Art Studio, and then wrote a program to make machine-code data statements out of the drawings. You'll just have to type in all the numbers I'm afraid.

The machine code itself does nothing startingly complicated. To animate the Invaders – in real terms swapping between two sets of graphics data – the IY and IX registers are used. The routine SWAP-GRAPHICS decides the data to be printed, using a variable which toggles between the two values of zero and 255.

And so all there is left to say is get typing! For the faint hearted ACU will be offering a disc with all the source code on it (in MAXAM assembler format), as well as a pre-assembled,



```
        jp dead                                   ;game as more and more
                                                  ;Aliens are killed.

PRINT_ALIEN                                       ;Print a single Alien
        push ix                                   ;at co-cords stored in
        push hl                                   ;H and L registers and
        call PRINT_CHAR:push de:pop ix            ;graphics pointed to in
        pop hl:push hl                            ;the IX register.
        inc l:inc l
        call PRINT_CHAR:push de:pop ix            ;Each alien is made up
        pop hl:push hl                            ;of several characters
        ld a,4:add l:ld l,a                       ;which must all be
        call PRINT_CHAR:push de:pop ix            ;printer one after
        pop hl:push hl:inc h                      ;the other.
        call PRINT_CHAR:push de:pop ix
        pop hl:push hl:inc h                      ;The graphics data
        inc l:inc l                               ;which is held in IX
        call PRINT_CHAR:push de:pop ix            ;is updated during the
        pop hl:push hl:inc h                      ;call to PRINT_CHAR
        ld a,4:add l:ld l,a
        call PRINT_CHAR
        pop hl
        pop ix
        ret

CHECK_INVADER
        ld a,(missile)
        cp 0
        jp z,not_hit                    ;Can't be shot if no missile is fired.
        sub 1
        cp 6
        jp nc,not_hit                             ;Missile missed alien.
        ld a,(missile+1)
        sub h
        cp 2
        jp nc,not_hit                             ;Missile missed alien.
        ;Bang! The missile has hit the Alien.
        push hl:ld ix,space:call PRINT_MISSILE:pop hl     ;Erase missile
        ld ix,banggr:call Print_Alien                     ;Draw explosion.
        call wait_frame:call wait_frame:call wait_frame   ;pause
        push hl
        ld a,0:ld (missile),a                             ;Reset missile
        ld a,(hits):inc a:ld (hits),a                     ;Increase hit counter
        cp 28:jr nz,not_all_dead                          ;Are all aliens dead?
        ld a,4:ld (flag),a
not_all_dead
```

```
	ld hl,(score):ld bc,5:add hl,bc:ld (score),hl	;Increase score
	call Print_score	;and print it.
	ld hl,(score):ex de,hl:ld hl,(high)	;Is it greater than
	scf:ccf:sbc hl,de	;the high score?
	jr nc,less_than
	ld hl,(score):ld (high),hl	;yes - change high
	call Print_high	;and print it.
less_than
	pop hl
	ld ix,space:call Print_Alien:ld ix,aliengr2	;Erase explosion
	ld a,0
	ret
not hit call DROP BOMB
	ld a,l:cp 0:call z,movedown	;Check for sides of
	ld a,l:cp 70:call z,movedown	;screen, and if aliens
	ld a,h:cp 22:jr nz,not_landed	;have reached bottom.
	ld a,2:ld (flag),a
not_landed
	ld a,1
	ret
movedown
	ld a,1:ld (moveflag),a:ret

DROP BOMB
	;Given DE from Invadersdata decide (or not) to drop bomb
	ld a,(bomb):cp 0:ret nz
	push hl:push de
	ld hl,7
	add hl,de
	ld a,(hl)
	cp 0
	jr nz,no_bomb
	call random
	ld a,l:and 127
	cp 48
	jr nz,no_bomb
	pop de:pop hl
	ld a,h:inc a:inc a:ld (bomb+1),a
	ld a,l:inc a:inc a:ld (bomb),a
	ret
no_bomb pop de:pop hl:ret
CONTROL_BOMB
	;Print invaders bomb and move it down;the screen.
	ld a,(bomb):cp 0:ret z
	ld hl,(bomb)
	ld ix,space:call PRINT_CHAR
	ld a,(bomb+1):inc a:ld (bomb+1),a
	cp 25:jr z,stopbomb
	ld hl,(bomb)
	ld ix,bombgr:call PRINT_CHAR
	ret
stopbomb
	;Check to see if it has hit anything.
	ld a,(basepos):ld b,a
	ld a,(bomb)
	sub b
	cp 4
	jr nc,not_hit_base
	ld a,3:ld (flag),a
not_hit_base
	ld a,0:ld (bomb),a
MOVE_INVADERS
	;Err.. move the invaders!
	ld a,(count):inc a:ld (count),a
	ld b,a:ld a,(speed)
	cp b
	ret nz
	ld a,0:ld (count),a
	call SWAP_GRAPHICS	;Animate the aliens.
	ld a,(moveflag)
	cp 0
	jr nz,come_on_down	;Move all aliens down a line.
	ld a,(dir)
	ld hl,xpos
	add (hl)
	ld (hl),a
	ret
come_on_down
	ld a,(dir)
	xor 254
	ld (dir),a
	ld hl,xpos
	add (hl)
	ld (hl),a
	ld ix,space:call PRINT_INVADERS
	ld a,(ypos):inc a:ld (ypos),a
	ret

SWAP_GRAPHICS
	;Swap between two sets of alien graphics data.
	ld a,(animate)
	xor 255
	ld (animate),a
```

```
        ld iy,aliengr1
        cp 0
        ret z
        ld iy,aliengr2
        ret

;-----------------------*** Variables ***----------------------

flag            db 0    ;The Control flag
speed           db 0    ;How often the baddies move
count           db 0    ;A counter used with 'speed'
invadersdata    ds 26   ;Area where Invaders are stored
db 0,0,0,0,0,0,0        ;Seven zeros used by Drop-bomb routine, honest!
moveflag        db 0  ;A flag controlling Invaders movement down the screen
dir             db 0    ;The direction they move in
xpos            db 0    ;Their actual x co-ord
ypos            db 0    ;The highest invader position
bomb            dw 0    ;The co-ordinates for the aliens' bombs
left            db 8    ;The key to move left
right           db 1    ;The key to move right
fire            db 23   ;The key to fire
missile         dw 0    ;Stores the player missile position
basepos         db 0    ;The position of the players base
hits            db 0    ;The number of Invaders shot
animate         db 0    ;A variable tuggled between two values
score           dw 0    ;Guess!
high            dw 20   ;Tough one this, too!
lives           db 0    ;Give up.
sheet           db 0    ;Hmm.
space           ds 96.0 ;Blanks for erasing graphics

;Message and Space-shield strings.
;Note   The number 31 is a control character which acts like a
;       LOCATE statement. Similarly, 15 and 14 control PEN and PAPER.
;Get the spaces correct by comparing with the dashes in the comments line.
;The strings contain not only words (such as SCORE:) but block graphics
;to define the player's shields.

string1
db 15,1,31,1,1,"SCORE:             SHEET:      HIGH:      $"
;                 ------------   --------   -------

string2
db 15,3,14,0,31,6,20,214,143.215,"        ",214,143,215
;                                  --------
db "       ",214.143,215,"        ",214,143,215
; --------                --------
```

```
db 31,6,21,143,143,143,"        ",143,143,143
;                        --------
db "       ",143,143,143,"        ".143.143.143
; `--------               --------
db 31,6.22,212,32,213,"        ",212,32,213
;                       --------
db "       ",212,032,213,"        ",212,032,213.15,1,"$"
 --------               --------

string3
db 31,14,10,"GAME OVER$"

string4
db 31,14,10,"WELL DONE$"

string5
;String to erase the little bases drawn up by Print_lives routine.
db 31,13,1,32,32,32,31.13,1,"$"

string6
;Title screen
db 15,1,31,4,5,"Hyperventilating Space Invaders"
db 15,2,31,19,7, "by"
db 15,1,31,15,9,"Auntie John"
db 15,3,31,11.12."Press Space to Play$"

;--------------**** General Purpose SubRoutines Library ****--------

PRINT_CHAR
;This is a very fast Character-sized Object print routine.
;ix = address of a 16 byte table of graphics
;h = Y co-ordinate (0-24)
;l = X co-ordinate (0-78)
 push ix:ld e,l:ld a,h:sla a:ld hl,chartable:ld b,0:ld c,a:add hl.bc
 ld a,(hl):ld c,a:inc hl:ld a,(hl):or &c0:ld b,a
 ld a,e:ld l,a:ld h,0:add hl,bc:pop de:ld bc,&7ff
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:addhl,bc
ld a,(de):ld (hl),a:inc hl:inc de:ld a,(de):ld (hl),a:inc de:ret
chartable
;data needed for above subroutine.
```

```
dw &C000,&C050,&C0A0,&C0F0,&C140,&C190,&C1E0,&C230,&C280
dw &C2D0,&C320,&C370,&C3C0,&C410,&C460,&C4B0,&C500,&C550
dw &C5A0,&C5F0,&C640,&C690,&C6E0,&C730,&C780

PRINT_STRING
;Print an ASCII string ending with a (non-printed) Dollar
ld a,(hl)
cp "$"
ret z
call txt_output
inc hl
jr PRINT_STRING


PRINTHL
;Print the contents of the HL register pair as a five-digit
;decimal number. You should know this code inside out by now!
ld de,10000:call pri:ld de,1000:call pri:ld de,100:call pri
ld de,10:call pri:ld de,1:pri:ld a,255:pr2:inc a:scf:ccf:sbc hl,de
jp nc,pr2:add hl,de:add 48:jp &bb5a


RANDOM
;Return a psuedo-random number in the HL pair
;Treat it as a magic formula. I do.
push af:push bc:push de:ld bc,(seed)::ld hl,(seed)
sla l:rl h:add hl,bc:ld b,h:ld c,l:sla l:rl h
ld d,l:sla l:rl h:sla l:rl h:add hl,bc:ld b,h
ld c,l:ld h,d:ld l,&29:or a:sbc hl,bc:ld (seed),hl
pop de:pop bc:pop af::ret
seed dw 0


; ------------------*** Very Boring Graphics Data ***------------------
;       --- Try bribing your younger brother to type this in! ---

bombgr
;The Alien's bomb.
db 0,12,3,192,48,12,0,195,0,60,3,192,48,12,0,192


missilegr
;The Player's missile
db 1,8,1,8,1,8,0,0,16,128,16,128,0,0,17,136


aliengr1
;The first Alien position
db 0,0,0,0,0,51,0,116,0,248,0,248,0,248,0,234
db 119,238,248,241,240,240,148,148,150,150,240,240,240,240,240,240
DB 0,0,0,0,204,0,226,0,241,0,241,0,241,0,49,0
db 0,234,0,234,0,251,0,248,0,252,0,50,0,0,0,0
db 98,100,64,32,32,64,136,0,196,17,136,0,0,0.0.0
db 117,0,117,0,117,0,249,0,226,0,200,0,0,0,0,0


aliengr2
;The second Alien position
db 0,0,0,51,0,116,0,248,0,248,0,248,0,234,0,234
db 248,241,240,240,148,148,150,150,240,240,240,240,240,240,234,117
db 0,0,204,0,226,0,241,0,241,0,241,0,117,0,117,0
db 0,234,0,234,0,234,0,224,0,224,0,226,0,238,0,0
db 100,98,34,68,0,0,0,0,0,0,0,0,0,0,0,0
db 117,0,117,0,117,0,112,0,112,0,114,0,119,0,0,0


basegr
;The data for the Player's base
db 0,0,0,0,0,0,0,0,0,7,0,120,0,120,0,120
db 1,8,16,128,19,132,54,194,120,225,240,240,240,240,240,240
db 0,0,0,0,0,0,0,0,14,0,225,0,225,0,225,0


banggr
;The explosion data
db 0,0,0,16,0,84,0,102,0,51,0,145,0,240,0,128
db 0,136,17,40,145,104,209,128,241,59,141,78,251,12,75,93
db 0,0,0,0,64,0,255,0,136,0,0,0,17,0,238,0
db 0,248,0,51,0,69,0,113,0,17,0,204,0,68,0,136
db 135,120,47,140,240,107,20,33,84,118,220,68,4,34,48,102
db 224,0,0,0,136,0,238,0,51,0,128,0,128,0,0,0


;---------------------------- THE END --------------------------


;Possible things you might like to add
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;2. Interrupt driven Music       *
;3. High score table             *
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;5. Useful shields
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;(* = covered in previous AJ Machine Code articles)
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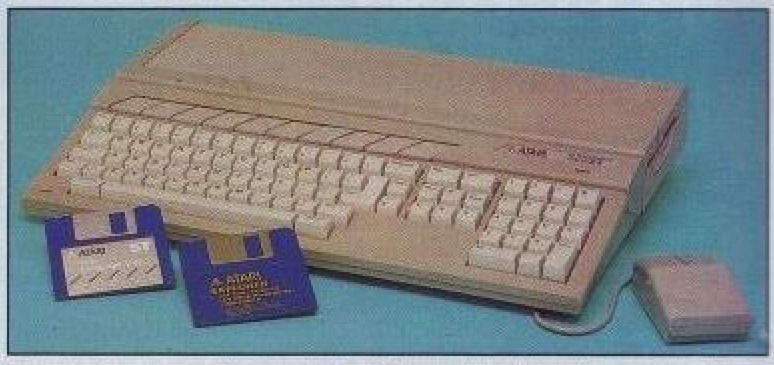
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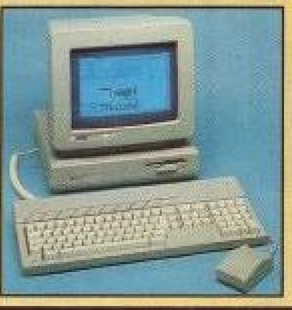
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APPLICATIONS ADVICE

He's got no hair, but we don't care. David Dorn dips into an overflowing mailbag to bring you the pick of the month's choicest CPC problems.



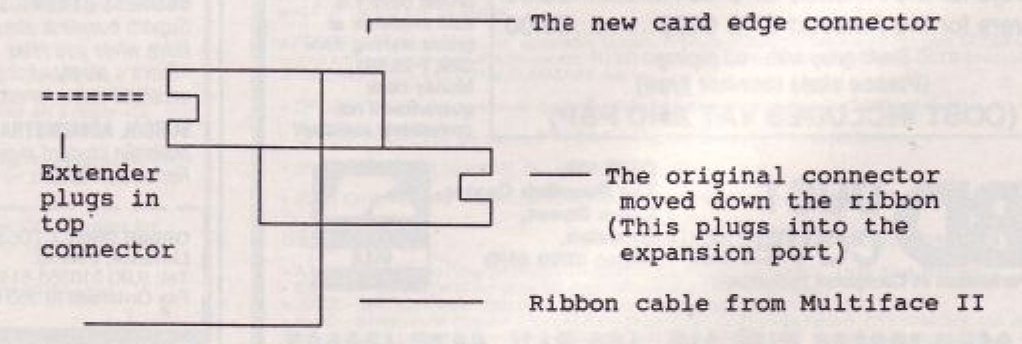
You may have seen in the letters in the September issue of your favourite CPC magazine that a diagram had gone missing from an answer to a query arising from an earlier edition. You might also have noticed Lance's heavy hint about reprinting the whole thing, just so you get all the facts. So, without further ado, here it is.

Howse that

First letter out of the bag this month comes from David Howse, a 464 owner from Oxfordshire. He has a Multiface II and DD1 hanging from the back of his machine, and is looking to add even more to it. He asks about extending the leads, because he has run out of room to fit everything in.

Well, as a general rule, the disc drive interface should be as close to the port as is humanly possible, because otherwise it can be temperamental and refuse to work correctly. There is an added snag here as David has obviously chained the DD1 after the Multiface, because the interface has no through connector. He is going to have some difficulty attaching anything anywhere, except between the port and the drive, and this will make matters worse. A solution may be at hand, however, which will keep the disc interface snug into the back of the computer, and which will still allow for some more peripherals to share the port.

What is needed is another 50-day card-edge IDC connector (like the connector on the Multiface), and a card-edge connector to card-edge connector card. Take the multiface and unscrew the bottom plate. This should allow you to remove the printed circuit board (PCB) and fold the ribbon cable back on itself, so that it comes out of the back of the box when the PCB is placed back inside it. Put back the bottom, just to prevent any damage to the PCB and its chips. (You might like to marvel at the



Caption: This is how the finished job will look. The 464 is on the right

superb construction while you are at it.)

Okay, now for the tricky bit. You will need to remove the original card-edge connector, but remember which side of the ribbon the connector sits. Move it down the ribbon (towards the Multiface) by 13mm (about half an inch) and re-install the ribbon. This takes some time and patience, and it is best done with a vice, so that the two halves of the connector can be squeezed onto the ribbon. The next part is easy, because you are going to do more or less the same with the new edge connector. This time, though, you must fit it on the other side of the ribbon cable. Because this is vitally important, I have drawn a diagram to show you exactly how the finished job will look (Fig 1.).

The two edge connectors should sit snugly together so that the bottom one supports the top one. Having done that, re-assemble the multiface as it was, making sure everything is secure. When you plug the original connector onto the port this time, the second will sit on top of it, and the extender will slot into it to give you a duplicate port. I would suggest that while the DD1 plugs in here, any other peripherals go on the multiface expansion connector. The card-edge connector and extender are available from Tandy or RS, and should not set you back more than a couple of pounds between them.

There you are – the first time I have seen a repeat in *ACU*. Still, if it is good enough for the BBC, it is good enough for us!

Hints taken

Now on to the up-to-date applications advice. I am pleased to say that a number of you have picked up the subtle hints I have been dropping over the last few issues, and have begun to send in hints of your own, as well as picking me up on little mistakes that creep in occasionally. I think that is great! I see *Applications Advice* as being more of a forum for sharing information and hints than somewhere for me to pontificate on matters technical . . . and that seems to be the way it is going to go.

First out of the bulging bag this month is W.C.T. Crosby, who writes; "I refer to your enquiry from Laszlo Czer, of Ashford, dealt with in the August issue, and for his assistance and that of other readers, I should like to point out that, although no mention is made in the *Mini Office II* instruction booklet, pressing >SHIFT< and >:< in any of the menus will take one into External Command Mode, in which Amsdos external commands will function. These include :ERA and :REN. It is only necessary to press >ESC< to return to the menu, and to whatever is in the working memory under the MOII program. This makes the management of discs much simpler."

I am also indebted to John R. Hudson, who sent in the same information, but expanded on it somewhat. He tells me that no punctuation is needed and that by using this syntax in MOII, and that the buffer for passing parameters is very small. Thus, to erase a file called "LETTER.DOC" from the default drive, the >SHIFT< >:> command should be given, followed by "ERA letter.doc" (the quote marks are mine, and should *not* be typed in. Note the total lack of normal punctuation.

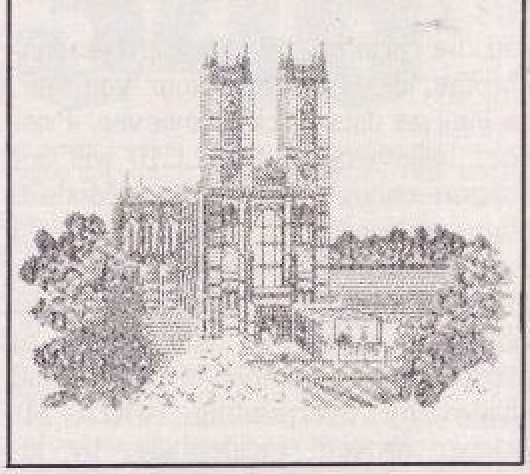
John goes on to say that the parameter buffer appears only to take sixteen characters including the command, which I can confirm. This means that, if you decide to do your disc housekeeping from within MOII, then you must keep filenames as short as possible. For instance. ":ERA article1.doc" will not work, although ":ERA B:let.doc" certainly will. If a filename is of a length such that housekeeping under MOII is not viable, then, as I said in the August issue, you'll have to drop into Basic to do the work.

I do not understand why Database have never documented the >SHIFT< >:< command, unless it is because of the severely limited buffer. Anyway, I am greatly indebted to both of our correspondents for their timely help. Thank you, gentlemen!

A good dump

I am also grateful to L.M. Cooper (AKA Prisoner), of Grassendale in Liverpool, who spotted my reply to D. Heath in the August issue, regarding LC10 colour dump routines. He has sent a listing which will do a very nice dump of Mode 1 screens, and one or two of which, I hope, are reproduced alongside it (see Fig.2).

He considers a Mode 1 dump to be adequate, because a Mode 2 screen



```
10 CLEAR:DEFINT a-z
20 GOSUB 360
30 MODE 1:INPUT "SCREEN: ",a$:LOAD a$,&C000
40 DIM pixel(650,10)
50 WIDTH 255
60 FOR y=399 TO 0 STEP -1
70 FOR x=0 TO 639 STEP 2
80 a=TEST(x,y)
90 pixel(x,a)=1
100 NEXT
110 PRINT£8,CHR$(27)CHR$(65)CHR$(0);
120 IF i0=999 THEN 170
130 PRINT£8,CHR$(27)CHR$(114)CHR$(i0);
140 PRINT£8,CHR$(27)CHR$(75)CHR$(64)CHR$(1);
150 FOR x=0 TO 639 STEP 2:IF pixel (x,0)<>0 THEN PRINT£8,CHR$(64); ELSE PRINT£8,CHR$(0);
160 pixel (x,0)=0:NEXT:PRINT£8
170 IF i1=999 THEN 220
180 PRINT£8,CHR$(27)CHR$(114)CHR$(i1);
190 PRINT£8,CHR$(27)CHR$(75)CHR$(64)CHR$(1);
200 FOR x=0 TO 639 STEP 2:IF pixel (x,1)<>0 THEN PRINT£8,CHR$(64); ELSE PRINT£8,CHR$(0);
210 pixel (x,1)=0:NEXT:PRINT£8
220 IF i2=999 THEN 270
230 PRINT£8,CHR$(27)CHR$(114)CHR$(i2);
240 PRINT£8,CHR$(27)CHR$(75)CHR$(64)CHR$(1);
250 FOR x=0 TO 639 STEP 2:IF pixel (x,2)<>0 THEN PRINT£8,CHR$(64); ELSE PRINT£8,CHR$(0);
260 pixel (x,2)=0:NEXT:PRINT£8
270 IF i3=999 THEN 320
280 PRINT£8,CHR$(27)CHR$(114)CHR$(i3);
290 PRINT£8,CHR$(27)CHR$(75)CHR$(64)CHR$(1);
300 FOR x=0 TO 639 STEP 2:IF pixel (x,3)<>0 THEN PRINT£8,CHR$(64); ELSE PRINT£8,CHR$(0);
310 pixel (x,3)=0:NEXT:PRINT£8
320 PRINT£8,CHR$(27)CHR$(51)CHR$(2);
330 PRINT£8
340.NEXT
350 END
360 MODE 2:zz$="0-Black  1-Red  2-Blue  3-Violet  4-Yellow  5-Orange  6-Green  999-White"
370 PRINT"Ink 0:  ";zz$
380 INPUT i0
390 PRINT"Ink 1:  ";zz$
400 INPUT i1
410 PRINT"Ink 2:  ";zz$
420 INPUT i2
430 PRINT"Ink 3:  ";zz$
440 INPUT i3
450 RETURN
```



can be printed as standard monochrome, in whatever colour you like, as long as it is black! However, Prisoner believes that the LC10 will not support enough colours for a Mode 0 dump, unless only pens 0-3 are used. I must argue with him here, for the following reasons. The LC10's colour ribbon is capable of being used to produce a vast number of colours and shades by overprinting (which Mr Cooper proved, incidentally, by including some orange, green, and violet text in his letter). Now, given a suitable algorithm, all the colours that the CPC can produce in Mode 0 could be reproduced on paper with an LC10 colour printer.

If an LC10 can cope with a sixteen-colour dump from an ST, it will certainly cope with Mode 0 on an Arnold. The basics of such a dump are in the listing that Mr Cooper has sent but, without having the LC10 manual to hand from which to ascertain the necessary escape codes (and being colour blind anyway, which doesn't help), I cannot give you any amendments to the original. However, I am sure that there are a few of you who are perfectly capable of working out the necessary code, and who would appreciate the challenge.

If you do manage it, please send it in to me, and I will print the listing for the benefit of the rest of the readers. At the same time, Mr Cooper might well be working on the Machine Code version of the Mode 1 dump, which he says he will pass on for your delectation as soon as he has it working.

I hope that all of the above, and the listing, will be of assistance to Mr M.A. White, who wrote to tell me that he has been having difficulty in getting colour dumps from the OCP Advanced Art Studio package, and who asked about suitable drivers and patches for the original code. Mr Cooper's listing is about the best I can offer at the moment; patching the OCP code would mean breaking the protection on the program, and the law is at present unclear about the desirability of doing this. And anyway, that is more in Vax's line than mine.

Satisfied

Peter Halliwell-Redvers is a 6128 owner who has, together with his son, had a great deal of satisfaction from his computer. Obtaining so much joy from Arnold, he went on a programming starter course at his local college in Blackpool, where he was taught on – yes you have guessed – a BBC B! Thus far, he has been reasonably successful in translating his knowledge from the Beeb on Basic he has been taught into the Amsdos Basic equivalent, but he has now hit a rather embarrassing snag – embarrasing for Arnold, that is.

The Beeb, you see, can handle random access disc-filing with its hands tied behind its back, and Mr Halliwell-Redvers is anxious to be able to emulate this on his CPC. 'I can write a program for a sequential file which I can LOAD, add to, and reSAVE,' he says, 'but what I want to do is write programs using RANDOM ACCESS FILES.' (his capitals!) He says he even knows how to write such programs, but does not know how to get them on and off disc.

The simple answer is that Amsdos has no facility for random access disc filing, so a straight translation is out of the question. Only two ways around the problem spring immediately to mind, both of which involve spending some money.

The first involves the purchase of a ROM box, and the RODOS ROM, which has effective random access filing routines in it. There are, of course, all kinds of other goodies contained in the chip as well, most of which really need a second (and bigger) disc drive. The documentation which accompanies RODOS leaves a little to be desired (or did when I reviewed it in *CPC Computing* many months ago). Teamed up with RODOS EXTRA, however, it is very effective indeed, and comes with ready made routines to incorporate into your code.

The second solution may not be one – and I have not been able to check this out, because I am writing this right in the middle of the holiday season. I seem to recall Minerva Systems marketing a database which boasted random access, and which incorporated some proprietary code to allow RA filing. I believe that subsequently they put the routines on the market in a separate package. My problem here is that I do not know whether this package is still on the market; in fact, I doubt that it is.

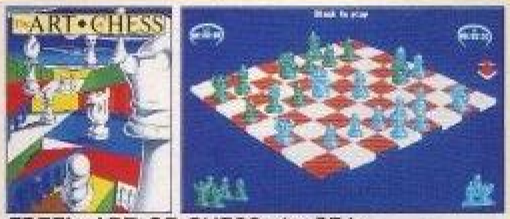
Amsdos will allow sequential file access, using WRITE, INPUT and LINE INPUT, but, as Mr Halliwell-Redvers has said, he can already do that. I am sorry I cannot be of any more help than this, but perhaps YOU can help. If so, you know our address.

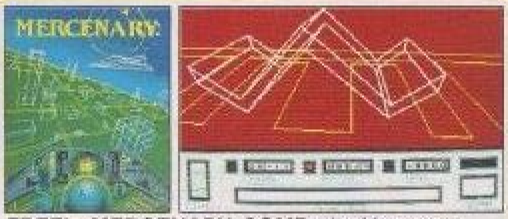
That about rounds it off for this month; space has caught up with us again. If you have any queries, or can offer any help with queries you have seen printed here, do not hesitate to put finger to word processor, and tell the world about it. Even if we have answered a point, you may know another way round it, or a better or a more elegant solution. If so, we want to hear from you. See you next month!

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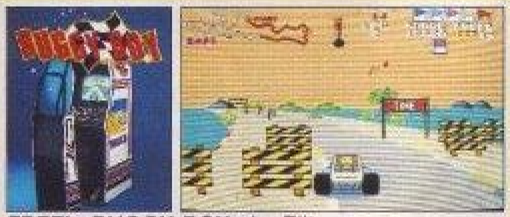

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Title: Amstrad Graphics – The Advanced User Guide
Author: Robert Ransom
Publisher: Sigma Press
Softback: 229pp
Price: £7.95

Amstrad Graphics – The Advanced User Guide is for use with the CPC 464, 664 and 6128 machines. Although the title suggests otherwise, the book is intended for novice programmers as well as the more experienced. The reader must already have mastered Basic to the point where he understands the commands well enough to have written a few programs of his own. This is the only prior knowledge needed. The book instructs the reader right from the simplest stages of using graphics, so he need not have experimented in this field before.

Throughout the book, the emphasis is on graphics in use in the real world – in the fields of computer-aided design and simulation graphics, for instance. The book's usefulness is therefore enhanced a great deal simply because it introduces the reader to subjects of worth, rather than concentrating solely on the fun element.

The author instructs the reader in the basic groundwork in a number of well-constructed chapters. All the topics covered in these chapters are illustrated by complete program listings and many accompanying diagrams. For those readers who are interested in pursuing this part of the learning process further, the author gives details of how he obtained these illustrations in the Preface.

For those readers who wish to move beyond the simple techniques detailed in these chapters, the rest of the book should prove fascinating. Learning how to use 3-D for instance, should keep enthusiasts happy for many an hour. The author has already done much of the hard work by providing some excellent program listings. All the reader has to do is enjoy himself.

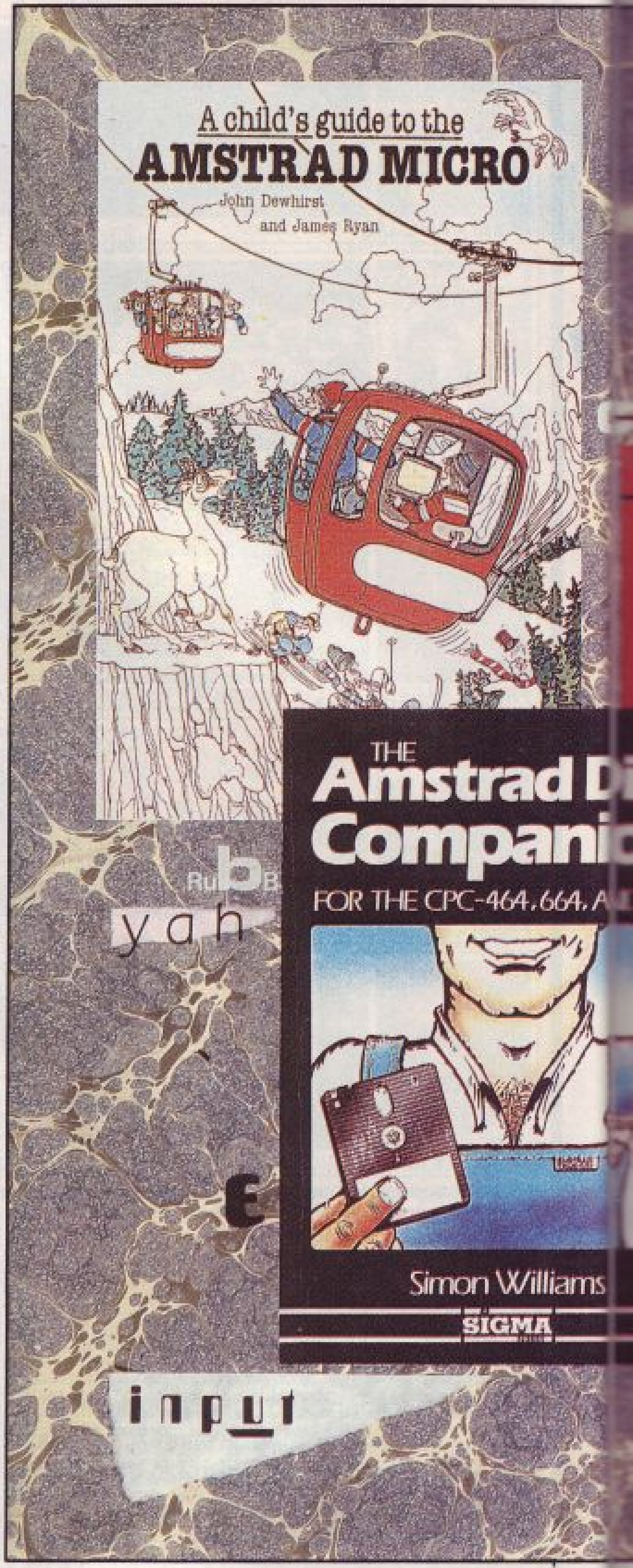
Title: A Child's Guide to the Amstrad Micro
Author: John Dewhirst & James Ryan
Publisher: Cambridge University Press
Softback: 96pp
Price: £4.95

This delightful starter book should come as welcome relief to harassed parents everywhere, those parents who succumbed and bought their child a computer, only to find out that they had no idea what to do with it. When that child is only ten years old and is more interested in what comes out of a cereal packet than what is hidden in a computer manual, trouble lies ahead. This book should do the trick, however.

The text is divided into five sections. Each of these sections is introduced by a character who is in complete charge of the subject covered by the section. The reader meets Prudence Comet first. Ms Comet is a typist. In her section, she shows the reader how the keyboard works and how to use it. All five sections are written in large print for little fingers to follow. Instructions start at the most basic level, and follow through to more complex procedures.

All key presses are boxed and in capital letters so the reader will not get confused. Things to try and things to remember are always in separate spaces and always start on the left-hand side of the page. The character in charge of the section is often either standing next to or pointing at these instructions. The right-hand side of the page belongs solely to large television screens which show exactly what the reader should see if he has done everything correctly. There are also lots of funny drawings to make life more interesting.

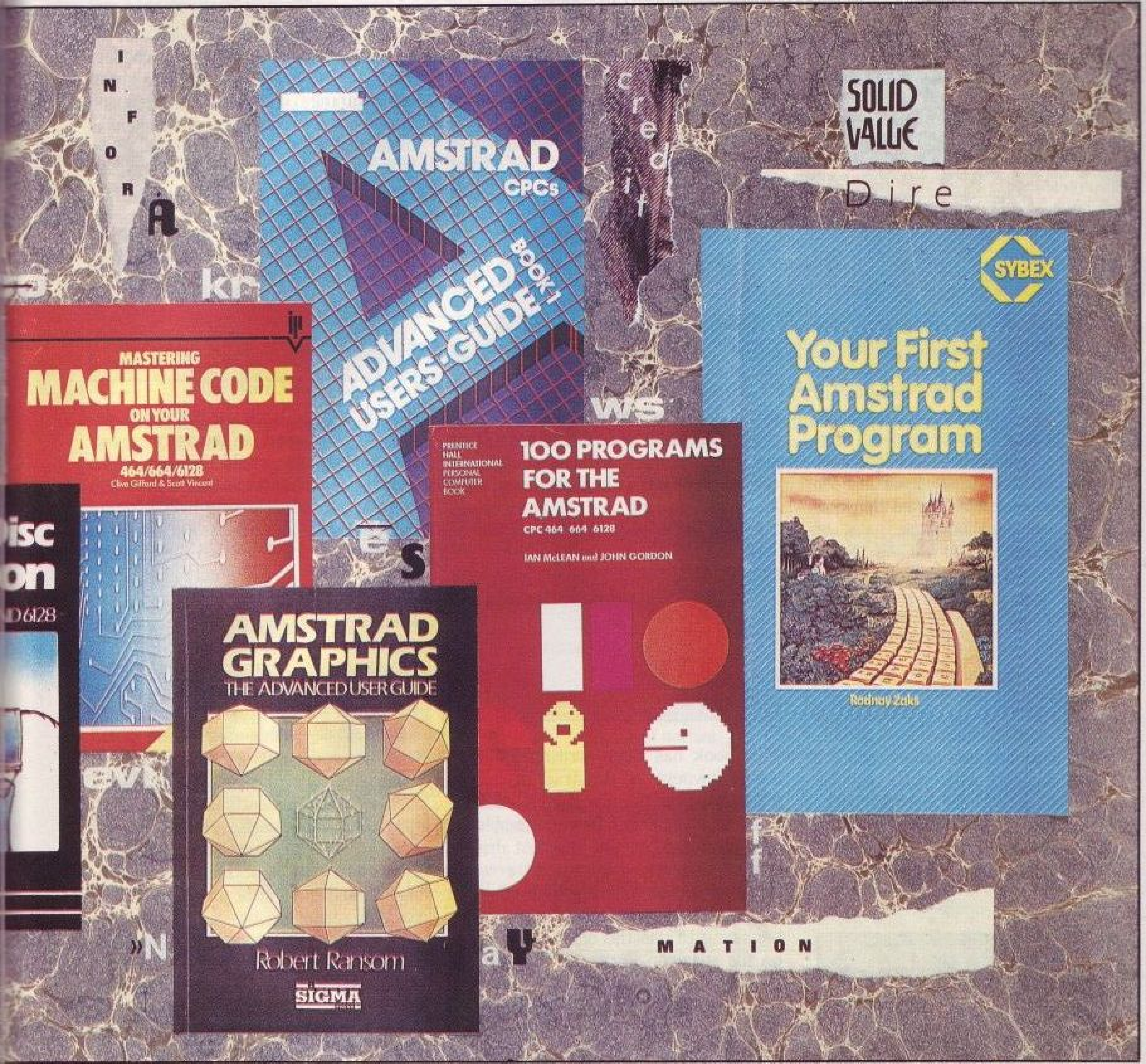
By the time the child gets to the programming section where Professor Oliver Crumpet is in charge, his long-suffering parents will know whether or not he or she is still interested. This book does everything it can to promote careful, methodical use of the knowledge it conveys, whilst revealing this exciting new



world. if the child fails to show any enthusiasm after reading and using this book, then he is probably never going to show any.

Title: Mastering Machine Code on your Amstrad 464/664/6128
Author: Clive Gifford & Scott Vincent
Publisher: Interface Publications
Softback: 263pp
Price: £8.95

Clive Gifford already has at least 20 books in print and Scott Vincent, also an author, has had several machine-code games published, as well as being



an experienced programmer. Together, their knowledge and expertise have produced this well thought-out book. Considering the subject matter, the authors have managed to keep the complicated terms and jargon to a minimum. The text is remarkably clear and precise; indeed those readers who have come into contact with the subject before may find the style too simplistic. Novices will wonder why they ever thought machine code too difficult to master.

This is the perfect sort of book for those who intend to get the best from machine code. Much of the work has already been done by the authors. Although the book is designed to be read in logical order, the style of presentation is such that the reader can flick through to any bits which attract his attention. Once he has understood the basic instructions given in the first few tutorial-style chapters, he should feel at ease to do this. If he comes across anything unfamiliar, he can always look back or refer to the dictionary of machine-code terms.

The main part of the book is taken up by fourteen pre-packaged routines ready and waiting for readers to try out. All the work has already been done; complete novices could use these routines without even reading the relevant section or knowing what they mean. The whole book is just as friendly and easy to use. The authors have a personal style which is attractive and stimulating to read.

Title: 100 Programs for the Amstrad 464, 664, 6128
Author: Ian McLean & John Gordon
Publisher: Prentice Hall
Softback: 228pp
Price: £8.95

The authors started planning this book by thinking about what Amstrad micros are used for. Not surprisingly, they came up with a wide range of uses. These they divided into eight separate sections, and thus they present topics covering such diverse

interests as programs for the science lab, programs for business and, of course, games programs. This book is therefore accessible to readers from many walks of life. Perhaps a small businessman wishes to create a mailing list, or a housewife wishes to computerise her monthly accounts.

Younger readers will find the book helpful in several respects; there is the fun element with games programs and then programs for turning the Amstrad micro into a music machine. There is also a serious side to the book: many of the programs are school-related. If the reader wishes to work out the value of a resistor from its colour code, there is a program in this book which can do it. There are also a myriad of other physics and maths programs and some language tutorials. Perhaps most important for the younger reader is the fact that this book can get him into the habit of using programs to help himself. None of the programs listed are perfect or definitive; they can all be modified to do what the reader wishes. He will not lose anything by trying – the programs are stored ready for him if something should go wrong.

For those boring hours when homework and business is finished, there is an interesting recreation section, dealing with such exotic subjects as Biorhythms and the Magic Matrix. Whatever use the reader puts his Amstrad to, there is a program in this book which could prove invaluable.

Title: Amstrad Advanced Users Guide Book 1
Author: Daniel Martin
Publisher: Glentop Publishers Ltd
Softback: 162pp
Price: £8.50

Daniel Martin is a systems engineer with the French firm Inter-technique who specialise in manufacturing micros based on the PICK system. Originally written in French, Glentop has brought the book to the British market for the benefit of Amstrad CPC users on this side of the Channel. The book will not be of interest to everyone, however. This is definitely a technical book. It is for those readers who wish to know about the structure of their machines; their components and the details of how they work.

Most of the book is taken up with details about internal workings of the Amstrad CPCs, both from a chip/circuit and internal software point of view. Readers wishing to learn how to program in Basic or looking for an easy introduction to machine code will not find it here. This book is for users who already know how to program in Basic and want to get down to the nitty-gritty and find out what really makes their computer tick. This type of book is guaranteed to turn most users weak at the knees, but for every nine that do, there is sure to be one who will find just what he has been looking for.

Despite the complexities of the subject matter covered, the layout of the book is simple and easy to follow. The whole text is divided into a series of lists and tables, with conventional pages occurring here and there. Even so, to get the most from this book, the reader will have to know exactly what he wants already and he must have the prior knowledge to help him use it.

Title: The Amstrad Disc Companion
Author: Simon Williams
Publisher: Sigma Press
Softback: 206pp
Price: £7.95

This book has been written for fortunate owners of Amstrad machines which have built-in disc drives, as well as owners of CPC 464s who are able to take advantage of the low-cost drives available. The book covers a wide range of topics, starting with connecting the micro to the drive and/or beginning to use the discs, depending on the machine involved. The author discusses both available operating systems, AMSDOS and CP/M; he pays particular attention to Amstrad-specific commands and any differences among the CPC micros.

Many books would stop here, but *The Amstrad Disc Companion* has two further sections. The first is aimed at programmers who wish to turn away from Basic and Z80 Assembly language to something new. The author briefly looks at Logo, Pascal and C. These pages are only meant to be quick introductions, giving the reader some idea of what each language can do for him; nevertheless, he will find them very interesting. Simon Williams is good at explaining himself and even readers with little knowledge of high-level languages will be able to understand what he is saying.

The last section of the book is taken up with details about business software and file handling, with emphasis on three commercially available software packages. Taken together, all this information should show readers how to use their micros to their greatest advantage. The layout of the glossary and index is good; they will help to make this a good reference guide long after the reader has digested most of the information in it.

Title: Your First Amstrad Program
Author: Rodney Zaks
Publisher: Sybex Inc
Softback: 208pp
Price: £6.95

Although this book is primarily designed to be used by the very young, almost anyone could benefit from reading it. The language is not too simple or condescending to bar adults from having a go at their first Amstrad program. Readers are led through the book by a series of friendly characters – the Program Snake, for example and Dino the Dinosaur, who lacks a formal education but who still learned how to program. The author states in the preface that readers should be writing their first Basic program within one hour; although this may seem a tall order, readers will soon discover otherwise.

The text is clearly laid out, with good use being made of a variety of type-styles to emphasise various types of instruction. There is a continuous stream of little program listings for the reader to try out. These are immediately followed in the text by orange boxes demonstrating what the reader should then see on the screen in front of him. Scattered throughout the text are large, often humorous drawings which depict an important fact the reader should remember. For example, when inputting data, the reader is instructed to keep it simple and not climb aboard a tottering pile of furniture, as Dino is doing, just to swat a fly.

At the end of every chapter, Dino summarises what the reader should have learned and then comes the test – a set of exercises to prove that all that information did go in. There is a list of selected answers at the back of the book for those who may need a little help! The exercises are not intended to fluster the reader; the book is fun and easy-going. It will only provide a grounding in essential Basic programming techniques, but that should be enough to start readers on their way to bigger things.

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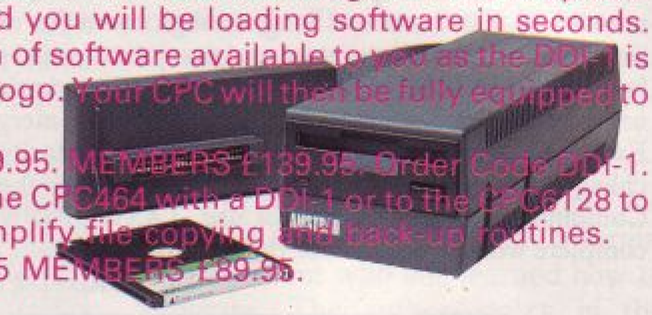
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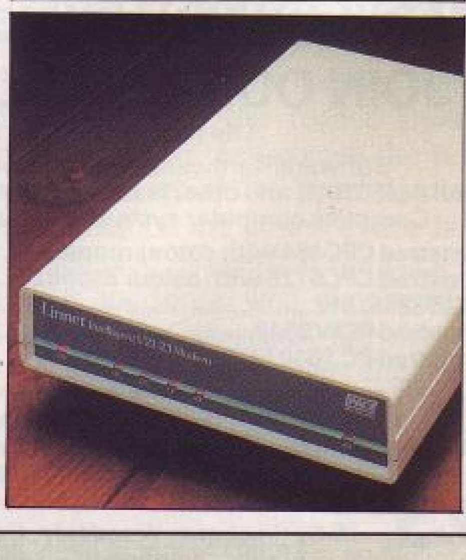
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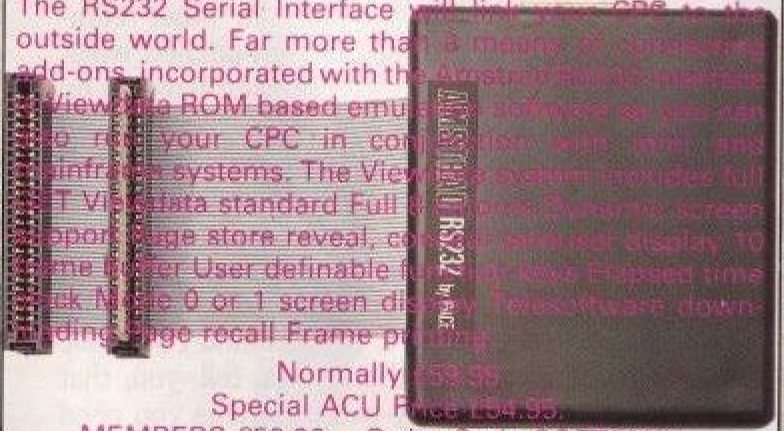
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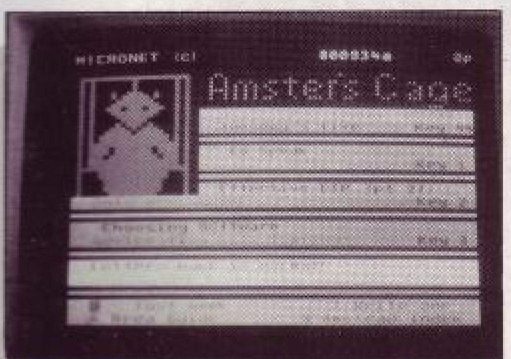
Have modem, will travel

Gordon Bates writes the first of a spanking new guide to the world of computer communications

Mention 'comms' to many CPC owners, and they will shy away from you, muttering under their breath about massive 'phone bills and strange black boxes that are practically impossible to understand. And this is all very understandable. A great many of the articles that you see written about comms do little to dispel the myth about modem use being an arcane art, suitable for only the advanced computer owner.

Nothing could be further from the truth, and to prove it, we are going to take a journey into the world of on-line databases, modems, 'phone lines and buzzwords. BUT, and it is a big but, we are going to start at the beginning, so that nobody gets lost on the way. I have laid down a few rules for myself, the most important one being that if I need to write something that is even remotely like jargon, I will put an explanation in a separate 'jargon box'. Again, this is to keep everybody on track. But do not worry, it is not as difficult as some would-be hackers would have you believe.

So, what is comms? To give it its full title, comms is 'computer communications', in this case, one computer to another, over telephone lines. In its simplest form, this means attaching a black box to the computer – called a modem – so that it can use the 'phone lines to talk to another similarly equipped computer. The other computer does not even have to be of the same make, much less the same kind, so it is quite possible for your CPC to talk to a mainframe, and even use it; and it is quite simple to implement this.



What the modem actually does in order to allow all this to happen is not really important at this stage; we will go into that at a later date. What is important, though, is to know what bits you need to be able to use one.

Firstly, you will need a serial interface. The CPC does not have one as standard, so you will need to buy one. Pace manufacture one, as do Amstrad themselves, and so do Spectre Communications and KDS (addresses at the end). The interface plugs into the expansion port at the back of your machine, and has an RS232c socket on it. An RS232c socket is usually configured as a 25-pin D-Sub male, while the similar socket on the modem is normally a 25-pin female equivalent. One of these interfaces will cost around £40. Like most add-ons for our machines, however, you will find them discounted in mail-order suppliers' advertisements. As this is just an introductory article, I will not make any recommendations as to which you should buy; I will look at each one in future columns.

The next thing on the list is the modem. There are basically two types of modem, which we will call intelligent and dumb. An intelligent modem usually conforms to what is known as the Hayes standard – named after the firm that invented it. Again, this need not concern us too much at this stage; suffice to say that a Hayes standard modem is likely to give you many



more facilities than a dumb modem, and is also easier to drive. Unfortunately, the intelligent modem is likely to be a bit more expensive than the dumb modem. The dumb modem nearly always requires you to use a telephone connected to a socket on the modem itself to dial the number of the computer you want to talk to. (I should also mention that you will need a telephone socket in your computer room somewhere, if you have not got one already). When the other computer answers – in high-pitched whistles and chirps – you then have to do all the connection work yourself. An intelligent modem, on the other hand, does all of this for you, given the right software.

And the only other thing you need, really, is some comms software. The fanatics of CPC comms (and I suppose I'm one of them) will tell you that there are only two programs you need or should consider. One is the *Cage Comms ROM*, and the other is the *Public Domain program MEX*, which runs under CP/M.

The Cage ROM was developed by Ian Hoare my one-time co-editor of the *Amster's Cage* – hence its title – and his partner Dave Gorski, who has written countless comms programs for a number of machines. I have absolutely no financial interest in it, as it happens, so I feel happy about recommending it to you, if you feel you want to use Prestel or Micronet. Once more, do not worry about what



Prestel and Micronet are – I will cover those later too! MEX (Modem EXecutive), being Public Domain, comes with the smallest possible price tag – zero! It is a very powerful program that manages to use the complexities of CP/M to its advantage. It can be used either very simply, or be highly configured, and is, in my opinion, the standard software for accessing bulletin board systems.

As you can see, all you need to get started in comms is a serial interface, a modem, a suitable lead from one to the other, and some software. The combined cost need not exceed £150, and this would give you a very creditable rig-out. Most of that money would go on the modem, because an intelligent one (which I would recommend) could cost anything from around one hundred pounds to well over one thousand. Obviously, the more expensive modems have many more features than the really cheap ones, but any modem should be viewed as an investment because, unlike many others add-ons for the CPC, if you decide to upgrade or change your computer, you will always be able to use your modem with it.

Next month, we will look at the Prestel and Micronet services, and see what they have to offer. If you have any questions about anything you have read here, please write in and ask them, I will be only too glad to answer them for you.

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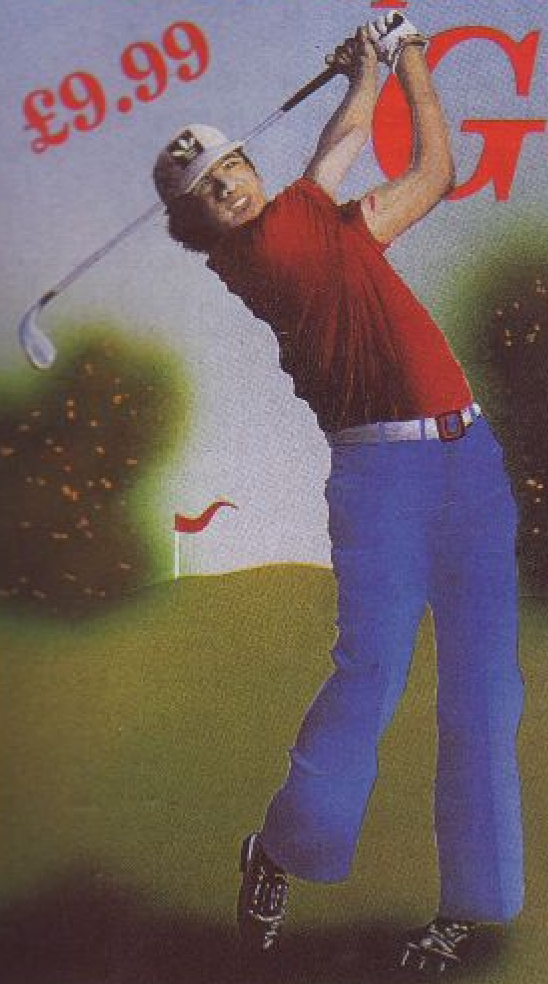
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